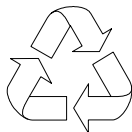


# **Power SP**

## **Service Guide**

Service guide files and updates are available on the AIPG/CSD web; for more information, please refer to <http://csd.acer.com.tw>



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# Revision History

Please refer to the table below for the updates made on Acer Power SP service guide.

| Date | Chapter | Updates |
|------|---------|---------|
|      |         |         |
|      |         |         |
|      |         |         |
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|      |         |         |

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## Conventions

The following conventions are used in this manual:

|                  |  |
|------------------|--|
| Screen messages  | Denotes actual messages that appear on screen.                                       |
| <b>NOTE</b>      | Gives bits and pieces of additional information related to the current topic.        |
| <b>WARNING</b>   | Alerts you to any damage that might result from doing or not doing specific actions. |
| <b>CAUTION</b>   | Gives precautionary measures to avoid possible hardware or software problems.        |
| <b>IMPORTANT</b> | Reminds you to do specific actions relevant to the accomplishment of procedures.     |

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## Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for Acer's "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional Acer office to order FRU parts for repair and service of customer machines.



# System Specifications

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## Overview

Acer Power SP supports Intel Pentium 4 Northwood based micro-ATX, IBM PC/AT compatible system with PCI/AGP bus.

**NOTE:** CPU frequency: up to 2.6GHz.

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# Features & Specifications

## CPU

- ☐ Intel Pentium 4 Willamette/Northwood, Celeron
- ☐ Front Side Bus: 400MHz
- ☐ Frequency: up to 2.6GHz

## Chipset

- ☐ Brookdale-GL
- ☐ ICH: Intel ICH4.
- ☐ SST 49LF002 FWH (2MB)

## Memory

- ☐ Two DIMM sockets
- ☐ DDR 200/266
- ☐ Capacity: 128MB ~ 1GB (please refer to the AVL list for compatibility).

## BIOS

- ☐ Winbond 49V002FAP FWH (2MB)
- ☐ Award BIOS code
- ☐ ACPI supported, default S3

## Super I/O

- ☐ Winbond W83627HF LPC super I/O with Hardware monitor supported

## RTC

- ☐ ICH4

## IDE

- ☐ Dual PCI Bus master enhanced IDE
- ☐ Ultra DMA 33/66/100 supported

## FDD

- ☐ 1.44/2.88 MB FDD

## Graphics

- ☐ On-die VGA

## Audio

- ☐ On-board (RealTek ALC201A AC'97 CODEC)

## LAN

- ☐ RealTek RTL8100BL integrated LAN with support WOL

## USB

- ☐ USB 2.0 Host Controller



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### **Expansion slots**

- ☐ 3 PCI slot (PCI 2.2)

### **Board size**

- ☐ Micro-ATX, 4 Layers

### **Industrial Standard**

- ☐ Windows Hardware Compatibility Labs
- ☐ ACPI 1.0b
- ☐ PCI 2.2
- ☐ PC2001 compliance
- ☐ Wired for Management 2.0
- ☐ Suspend to RAM

# Front Panel

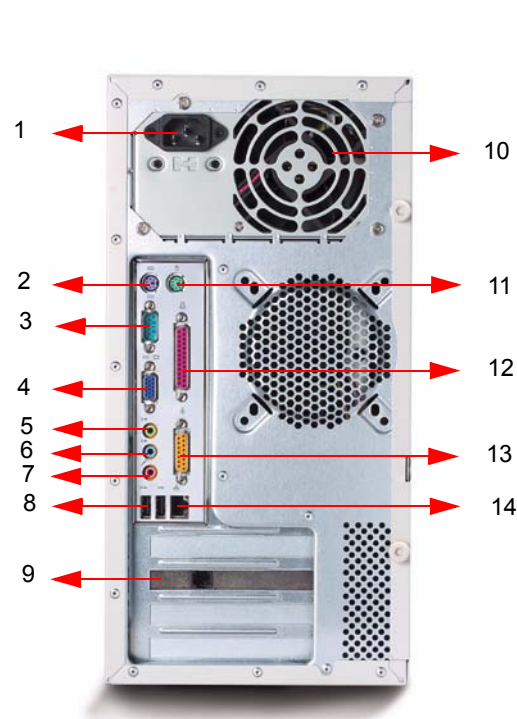
The computer's front panel consists of the following:



| Label | Description            |
|-------|------------------------|
| 1     | Optical Drive          |
| 2     | Floppy Drive           |
| 3     | Power Button           |
| 4     | USB Ports              |
| 5     | Microphone Jack        |
| 6     | Speaker/Headphone Jack |

# Rear Panel

The computer's rear panel consists of the following:



| Label | Description              |
|-------|--------------------------|
| 1     | Power cord socket        |
| 2     | PS/2 keyboard port       |
| 3     | Serial connector         |
| 4     | Monitor connector        |
| 5     | Headphone jack           |
| 6     | Speaker Jack             |
| 7     | Microphone Jack          |
| 8     | USB Connector            |
| 9     | PCI card slot            |
| 10    | Fan aperture             |
| 11    | PS/2 mouse connector     |
| 12    | Printer connector        |
| 13    | Game/MIDI port           |
| 14    | RJ-45 ethernet connector |



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## Hardware Specifications and Configurations

### Processor


| Item                    | Specification  |
|-------------------------|--|
| Type                    | Pentium 4  |
| Socket                  | 478  |
| Speed                   | 1.8G~2.6G+   |
| Minimum operating speed | 0 MHz (If <b>Stop CPU Clock in Sleep State in BIOS Setup</b> is set to <b>Enabled</b> .) |
| Voltage                 | Processor voltage can be detected by the system without setting any jumper.              |

### BIOS

| Item                               | Specification   |
|------------------------------------|---|
| BIOS code programmer               | Award   |
| BIOS version                       | v6.0  |
| BIOS ROM type                      | Flash ROM   |
| BIOS ROM size                      | 2MB   |
| BIOS ROM package                   | 32-pin DIP package  |
| Support protocol                   | PCI 2.2, APM1.2, DMI 2.00.1, E-IDE, ACPI 1.0, ESCD 1.03, ANSI ATA 3.0, PnP 1a, Bootable CD-ROM 1.0, ATAPI |
| Boot from CD-ROM feature           | Yes   |
| Support to LS-120 drive            | No  |
| Support to BIOS boot block feature | No  |

**NOTE:** The BIOS can be overwritten/upgraded by using the flash utility.

### BIOS Hotkey List

| Hotkey  | Function                 | Description  |
|---|--------------------------|--|
|  | Enter BIOS Setup Utility | Press while the system is booting to enter BIOS Setup Utility. |

This section has two table lists, system memory specification and the possible combinations of memory module.

### System Memory

| Item   | Specification   |
|--|---|
| Memory socket number                           | 2 sockets (4 banks)   |
| Support memory size per socket                 | 64MB / 128MB / 256MB/ 512MB   |
| Support maximum memory size                    | 1G x2   |
| Support memory type                            | DDR SDRAM   |
| Support memory speed                           | 266MHz (PC2001)   |
| Support memory voltage                         | 2.5 V   |
| Support memory module package                  | 184-pin DIMM  |
| Support to parity check feature                | Yes   |
| Support to Error Correction Code (ECC) feature | Yes   |
| Memory module combinations                     | You can install memory modules in any combination as long as they match the above specifications. |

### Memory Combinations

| Slot                            | Memory Module           | Total Memory |
|---------------------------------|-------------------------|--------------|
| Slot 1                          | 64, 128, 256, 512MB, 1G | 64MB~1G      |
| Slot 2                          | 64, 128, 256, 512MB, 1G | 64MB~1G      |
| Maximum System Memory Supported |                         | 64MB~2G      |

### Cache Memory

| Item                              | Specification                               |
|-----------------------------------|---|
| First-Level Cache Configurations  |   |
| Cache function control            | Enable/Disable by BIOS Setup                |
| Second-Level Cache Configurations |   |
| L2 Cache RAM type                 | PBSRAM                                      |
| L2 Cache RAM size                 | 256-KB                                      |
| L2 Cache RAM speed                | One-half the processor core clock frequency |
| L2 Cache RAM voltage              |   |
| L2 Cache function control         | Enable/Disable by BIOS Setup                |
| L2 Cache scheme                   | Fixed in write-back                         |

### Video Memory

| Item        | Specification |
|-------------|---------------|
| Memory size | 8 MB or above |

This section has two table lists, the video interface specification and its supported display modes.

### Video Interface

| Item                          | Specification |
|-------------------------------|---------------|
| Video controller              | Intel 845GE   |
| Video controller resident bus | AGP bus       |

## Video Interface

| Item                    | Specification   |
|-------------------------|---|
| Video interface support | Video YUV texture in all texture formats<br>H/W DVD accelerator |

| Display Screen Resolution | Refresh Rate (Hz) | Hor. Scan (KHz) | Pixel Clock (MHz) |
|---------------------------|-------------------|-----------------|-------------------|
| 640x480                   | 60                | 31.5            | 25.2              |
| 640x480                   | 72                | 37.4            | 32.0              |
| 640x480                   | 75                | 37.5            | 31.5              |
| 640x480                   | 85                | 43.3            | 36.0              |
| 640x480                   | 120               | 63.7            | 55.0              |
| 800x600                   | 56                | 35.2            | 36.0              |
| 800x600                   | 60                | 37.8            | 39.9              |
| 800x600                   | 72                | 48.0            | 50.0              |
| 800x600                   | 75                | 46.9            | 49.5              |
| 800x600                   | 85                | 53.7            | 56.2              |
| 800x600                   | 100               | 62.5            | 67.5              |
| 800x600                   | 120               | 76.1            | 81.0              |
| 800x600                   | 160               | 101.9           | 110.0             |
| 1024x768                  | 70                | 56.5            | 75.0              |
| 1024x768                  | 75                | 60.0            | 78.8              |
| 1024x768                  | 100               | 79.0            | 110.0             |
| 1280x1024                 | 43                | 50.0            | 80.0              |
| 1280x1024                 | 60                | 64.0            | 110.0             |
| 1280x1024                 | 85                | 91.2            | 157.5             |
| 1600x1200                 | 60                | 76.2            | 156.0             |
| 1600x1200                 | 85                | 106.2           | 229.5             |

## Audio Interface

| Item                          | Specification   |
|-------------------------------|---|
| Audio controller              | ICH4  |
| Audio controller resident bus | AC'97   |
| Audio function control        | Enable/disable by BIOS Setup  |
| Mono or stereo                | Stereo  |
| Resolution                    | 20 bits   |
| Compatibility                 | Sound Blaster Pro/16 compatible<br>Mixed digital and analog high performance chip<br>Enhanced stereo full duplex operation<br>High performance audio accelerator and AC'97 support<br>Full native DOS games compatibility<br>Virtual FM enhances audio experience through real-time FM-to-Wavetable conversion<br>MPU-401(UART mode) interface for wavetable synthesizers and MIDI devices<br>Integrated dual game port<br>Meets AC'97and WHQL specifications |
| Music synthesizer             | Yes, internal FM synthesizer  |

### Audio Interface

| Item                 | Specification |
|----------------------|---------------|
| Sampling rate        | 48 KHz (max.) |
| MPU-401 UART support | Yes           |
| Microphone jack      | Supported     |
| Headphone jack       | Supported     |

### IDE Interface

| Item                        | Specification   |
|-----------------------------|---|
| IDE controller              | Intel ICH4  |
| IDE controller resident bus | PCI bus   |
| Number of IDE channel       | 2   |
| Support IDE interface       | E-IDE (up to PIO mode-4 and Ultra DMA 33/66), ANSIS ATA rev.3.0 ATAPI |
| Support bootable CD-ROM     | Yes   |

### Floppy disk drive Interface

| Item                                      | Specification                       |
|---|-------------------------------------|
| Floppy disk drive controller              | Intel ICH4                          |
| Floppy disk drive controller resident bus | ISA bus                             |
| Support FDD format                        | 360KB, 720KB, 1.2MB, 1.44MB, 2.88MB |

### Parallel Port

| Item   | Specification                    |
|--|----------------------------------|
| Parallel port controller                               | Intel ICH4                       |
| Parallel port controller resident bus                  | ISA bus                          |
| Number of parallel ports                               | 1                                |
| Support ECP/EPP  | SPP / Bi-directional / ECP / EPP |
| Connector type   | 25-pin D-type female connector   |
| Parallel port function control                         | Enable/disable by BIOS Setup     |
| Optional ECP DMA channel<br>(in BIOS Setup)            | DMA channel 1<br>DMA channel 3   |
| Optional parallel port I/O address<br>(via BIOS Setup) | 378h<br>278h                     |
| Optional parallel port IRQ<br>(via BIOS Setup)         | IRQ5<br>IRQ7                     |

### Serial Port

| Item   | Specification                                    |
|--|--|
| Serial port controller                               | Intel ICH4                                       |
| Serial port controller resident bus                  | ISA bus  |
| Number of serial port                                | 2  |
| 16550 UART support                                   | Yes  |
| Connector type                                       | 9-pin D-type female connector                    |
| Optional serial port I/O address<br>(via BIOS Setup) | COM1: 2F8h, 3E8h, 2E8h<br>COM2: 3E8h, 3F8h, 2F8h |



## Serial Port

| Item   | Specification                            |
|--|--|
| Optional serial port IRQ<br>(via BIOS Setup) | COM1: IRQ 3, and 4<br>COM2: IRQ 4, and 3 |

## Modem

| Item                            | Specification                   |
|---------------------------------|---------------------------------|
| Fax modem data baud rate (bps)  | V.17 12K/1.44K                  |
| Data modem data baud rate (bps) | V.90 32K to 56K (received only) |
| Voice modem                     | V.253                           |
| Modem connector type            | RJ11                            |
| Full duplex                     | Yes                             |

## USB Port

| Item          | Specification                           |
|---------------|---|
| Universal HCI | USB 2.0                                 |
| USB Class     | Support legacy keyboard for legacy mode |

## Memory Address Map

| Address               | Size      | Function   |
|-----------------------|-----------|--|
| 000000 - 07FFFF       | 512KBytes | Host Memory  |
| 080000 - 09FFFF       | 128KBytes | Host/PCI Memory  |
| 0A0000 - 0BFFFF       | 128KBytes | PCI/ISA Video Buffer Memory  |
| 0C0000 - 0C7FFF       | 32KBytes  | Video BIOS Memory  |
| 0C8000 - 0DFFFF       | 96Kbytes  | ISA Card BIOS & Buffer Memory  |
| 0E0000 - 0EFFFF       | 64Kbytes  | BIOS Extension Memory<br>Setup and Post Memory<br>PCI Development BIOS |
| 0F0000 - 0FFFFFFF     | 64Kbytes  | System BIOS Memory   |
| 100000 - UPPER LIMIT  |           | Main Memory  |
| UPPER LIMIT - 4GBytes |           | PCI Memory   |

## PCI INTx# and IDSEL Assignment Map

| PCI INTx # | PCI Devices | Device IDSEL: ADxx |
|------------|-------------|--------------------|
| INTA#      | ADIMM-slot  | N                  |
| INTB#      | PCI-Slot1   | AD20               |
| INTC#      | PCI-Slot2   | AD22               |
| INTD#      | PCI-Slot3   | AD24               |

## PCI Slot IRQ Routing Map

| PCI INTX#  | INTA    | INTB    | INTC    | INTD    | Bus Mastering |
|------------|---------|---------|---------|---------|---------------|
| PCI slot 1 | Route 4 | Route 1 | Route 2 | Route 3 | Enabled       |
| PCI slot 2 | Route 3 | Route 4 | Route 1 | Route 2 | Enabled       |
| PCI slot 3 | Route 2 | Route 3 | Route 4 | Route 1 | Enabled       |

## I/O Address Map

| Hex Range | Devices                              |
|-----------|--------------------------------------|
| 000-01F   | DMA Controller-1                     |
| 020-021   | Interrupt Controller-1               |
| 040-043   | System Timer                         |
| 060-060   | Keyboard Controller 8742             |
| 061-061   | System Speaker                       |
| 070-071   | CMOS RAM Address and Real Time Clock |
| 080-08F   | DMA Page Register                    |
| 0A0-0A1   | Interrupt Controller-2               |
| 0C0-0DF   | DMA Controller-2                     |
| 0F0-0FF   | Math Co-Processor                    |
| 170-177   | Secondary IDE                        |
| 1F0-1F7   | Primary IDE                          |
| 278-27F   | Parallel Printer Port 2              |
| 2F8-2FF   | Serial Asynchronous Port 2           |
| 378-37F   | Parallel Printer Port 1              |
| 3F0-3F5   | Floppy Disk Controller               |
| 3F6-3F6   | Secondary IDE                        |
| 3F7-3F7   | Primary IDE                          |
| 3F8-3FF   | Serial Asynchronous Port 1           |
| 0CF8      | Configuration Address Register       |
| 0CFC      | Configuration Data Register          |
| 778-77A   | Parallel Printer Port 1              |

## IRQ Assignment Map

| IRQx  | System Devices             | Add-On-Card Devices |
|-------|----------------------------|---------------------|
| IRQ0  | Timer                      | N                   |
| IRQ1  | Keyboard                   | N                   |
| IRQ2  | Cascade Interrupt Control  | N                   |
| IRQ3  | Serial Alternate           | Reserved            |
| IRQ4  | Serial Primary             | Reserved            |
| IRQ5  | MPU-401(Alternate)         | Reserved            |
| IRQ6  | Floppy Disk                | Reserved            |
| IRQ7  | Parallel Port              | Reserved            |
| IRQ8  | Real Time Clock            | N                   |
| IRQ9  | N                          | Reserved            |
| IRQ10 | N                          | Reserved            |
| IRQ11 | N                          | Reserved            |
| IRQ12 | PS/2 Mouse                 | Reserved            |
| IRQ13 | Math Coprocessor Exception | N                   |
| IRQ14 | Primary IDE                | Reserved            |
| IRQ15 | Secondary IDE              | Reserved            |

**NOTE:** N - Not be used

### DRQ Assignment Map

| DRQx | System Devices | Add-On-Card Devices |
|------|----------------|---------------------|
| DRQ0 | N              | Reserved            |
| DRQ1 | N              | Reserved            |
| DRQ2 | FDD            | N                   |
| DRQ3 | N              | Reserved            |
| DRQ4 | Cascade        | N                   |
| DRQ5 | N              | Reserved            |
| DRQ6 | N              | Reserved            |
| DRQ7 | N              | Reserved            |

**NOTE:** N - Not be used

### Main Board Major Chips

| Item                 | Controller       |
|----------------------|------------------|
| System core logic    | Intel 845GE/ICH4 |
| Video controller     | Intel 845GE      |
| Super I/O controller | LPC47M192        |
| Audio controller     | Intel 845GE      |
| LAN controller       | Intel 845GE      |
| HDD controller       | Built in ICH4    |
| Keyboard controller  | Built in ICH4    |
| RTC                  | Built in ICH4    |

### Environmental Requirements

| Item                   | Specifications                |
|------------------------|-------------------------------|
| Temperature            |                               |
| Operating              | +5 ~ +35°C                    |
| Non-operating          | -20 ~ +60°C (Storage package) |
| Humidity               |                               |
| Operating              | 15% to 80% RH                 |
| Non-operating          | 20% to 90% RH                 |
| Vibration              |                               |
| Operating (unpacked)   | 5-500Hz, 2.20G                |
| Non-operating (packed) | 5-500Hz, 1.09G                |

### Mechanical Specifications

| Item   | Specification                 |
|--|-------------------------------|
| Weight<br>One 3 ½ FDD and one 3.5 HDD<br>(without packing) | Varied by local configuration |
| Dimensions<br>(main footprint)                             | N/A                           |

---

### Switching Power Supply 200W

| Input Frequency | Frequency Variation Range |
|-----------------|---------------------------|
| 50MHz           | 47MHz to 53MHz            |
| 60MHz           | 57MHz to 63MHz            |

| Input Voltage  | Variation Range |
|----------------|-----------------|
| 100 - 120 VRMS | 90 - 132 VRMS   |
| 200 - 240 VRMS | 180 - 264 VRMS  |

| Input Current | Measuring Range |
|---------------|-----------------|
| 4A            | 90 - 132 VRMS   |
| 2A            | 180 - 264 VRMS  |

**NOTE:** Measure at line input 90 VRMS and maximum load condition.

| Output Requirements | Regulation | Current Rating |
|---------------------|------------|----------------|
| +5V                 | +5%        | 15A            |
| +12V                | +5%        | 3A             |
| -12V                | +10%       | 0.3A           |
| +3.3V               | +4%        | 12A            |
| +5Vaux              | +5%        | 3A             |

**NOTE:** APSP is equipped with a 200W power supply.

---

## Power Management Function (ACPI support function)

### Device Standby Mode

- ☐ Independent power management timer for hard disk drive devices (0-15 minutes, time step=1 minute).
- ☐ Hard disk drive goes into Standby mode (for ATA standard interface).
- ☐ Disable V-sync to control the VESA DPMS monitor.
- ☐ Resume method: device activated (Keyboard for DOS, keyboard & mouse for Windows).
- ☐ Resume recovery time: 3-5 sec.

### Global Standby Mode

- ☐ Global power management timer (2-120 minutes, time step=10 minute).
- ☐ Hard disk drive goes into Standby mode (for ATA standard interface).
- ☐ Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- ☐ Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- ☐ Resume recovery time: 7-10 sec.

### Suspend Mode

- ☐ Independent power management timer (2-120 minutes, time step=10 minutes) or pushing external switch button.
- ☐ CPU goes into SMM.
- ☐ CPU asserts STPCLK# and goes into the Stop Grant State.
- ☐ LED on the panel turns amber colour.
- ☐ Hard disk drive goes into SLEEP mode (for ATA standard interface).
- ☐ Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- ☐ Ultra I/O and VGA chip go into power saving mode.
- ☐ Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- ☐ Return to original state by pushing external switch button, modem ring in and USB keyboard for ACPI mode.

### ACPI

- ☐ ACPI specification 1.0.
- ☐ S0, S1, S3 and S5 sleep state support.
- ☐ On board device power management support.
- ☐ On board device configuration support.



## System Utilities

---

Most systems are already configured by the manufacturer or the dealer. There is no need to run Setup when starting the computer unless you get a Run Setup message.


The Setup program loads configuration values into the battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.

**NOTE:** If you repeatedly receive Run Setup messages, the battery may be bad/flat. In this case, the system cannot retain configuration values in CMOS.

Before you run Setup, make sure that you have saved all open files. The system reboots immediately after you exit Setup.

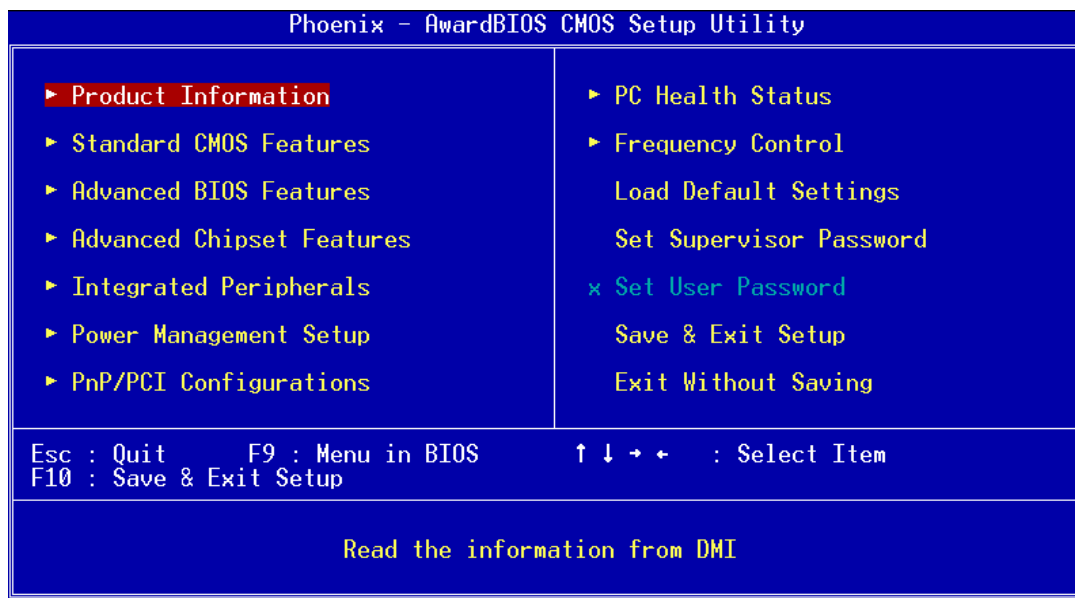
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## Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message of “Press DEL to enter SETUP” appears on the screen, press  to enter the setup menu.

**NOTE:** If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On. You may also restart the system by simultaneously pressing [Ctrl+Alt+Delete].








The Setup Utility main menu then appears:





---

The command line at the bottom of the menu tells you how to move within a screen and from one screen to another.

- ❑ To select an option, move the highlight bar by pressing  or  then press .
- ❑ To change a parameter setting, press  or  until the desired setting is found.
- ❑ Press  to return to the main menu. If you are already in the main menu, press  again to exit Setup.

The parameters on the screens show default values. These values may not be the same as those in your system.

The grayed items on the screens have fixed settings and are not user-configurable.

**NOTE:** Due to the application of a new version of BIOS Setup program, you may find the BIOS menu is largely different from the former models. However, you will soon find out that this version is much more compact than the former ones.

# Product Information

The screen below appears if you select Product Information from the main menu:

The Product Information menu contains general data about the system, such as the product name, serial number, BIOS version, etc. These information is necessary for troubleshooting (may be required when asking for technical support).

| Phoenix - AwardBIOS CMOS Setup Utility                                  |              |              |
|---|--------------|--------------|
| Product Information   |              |              |
| Product Name  | AcerPower SP | Item Help    |
| System S/N  |              | Menu Level ▶ |
| Main Board ID   | F61          |              |
| Main Board S/N  |              |              |
| System BIOS Version   | V6.00        |              |
| SMBIOS Version  | 2.3          |              |
| System BIOS ID  | R01-A1       |              |
| BIOS Release Date   | Feb 9, 2003  |              |
| ↑↓↔:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help |              |              |
| F5: Previous Values F6: Fail-Safe Defaults F7: Default Settings         |              |              |

---

The following table describes the parameters found in this menu:

| Parameter           | Description  |
|---------------------|--|
| Product Name        | Displays the model name of your system.  |
| System S/N          | Displays your system's serial number.  |
| Main Board ID       | Displays the main board's identification number.   |
| Main Board S/N      | Displays your main board's serial number.  |
| System BIOS Version | Specifies the version of your BIOS utility.  |
| SMBIOS version      | The System Management Interface (SM) BIOS allows you to check your system hardware components without actually opening your system. Hardware checking is done via software during start up. This parameter specifies the version of the SMBIOS utility installed in your system. |
| System BIOS ID      | Specifies the version ID of the BIOS utility.  |
| BIOS Release Date   | Displays the release date of the BIOS utility.   |

## Standard CMOS Features

Select Standard CMOS Features from the main menu to configure some basic parameters in your system.

The following screen shows the Standard CMOS Features menu:

| Phoenix - AwardBIOS CMOS Setup Utility |                      |
|--|----------------------|
| Standard CMOS Features                 |                      |
| Date (mm:dd:yy)                        | Tue, Feb 18 2003     |
| Time (hh:mm:ss)                        | 15 : 31 : 18         |
| ▶ IDE Primary Master                   |                      |
| ▶ IDE Primary Slave                    |                      |
| ▶ IDE Secondary Master                 |                      |
| ▶ IDE Secondary Slave                  |                      |
| Drive A                                | [1.44M, 3.5 in.]     |
| Drive B                                | [None]               |
| Video                                  | [EGA/VGA]            |
| Halt On                                | [All , But Keyboard] |
| Base Memory                            | 640K                 |
| Extended Memory                        | 64512K               |
| Total Memory                           | 65536K               |

| Item                                    | Help |
|---|------|
| Menu Level                              | ▶    |
| Change the day, month, year and century |      |

|                     |                        |                      |           |           |                  |
|---------------------|------------------------|----------------------|-----------|-----------|------------------|
| ↑↓→←: Move          | Enter: Select          | +/-/PU/PD: Value     | F10: Save | ESC: Exit | F1: General Help |
| F5: Previous Values | F6: Fail-Safe Defaults | F7: Default Settings |           |           |                  |

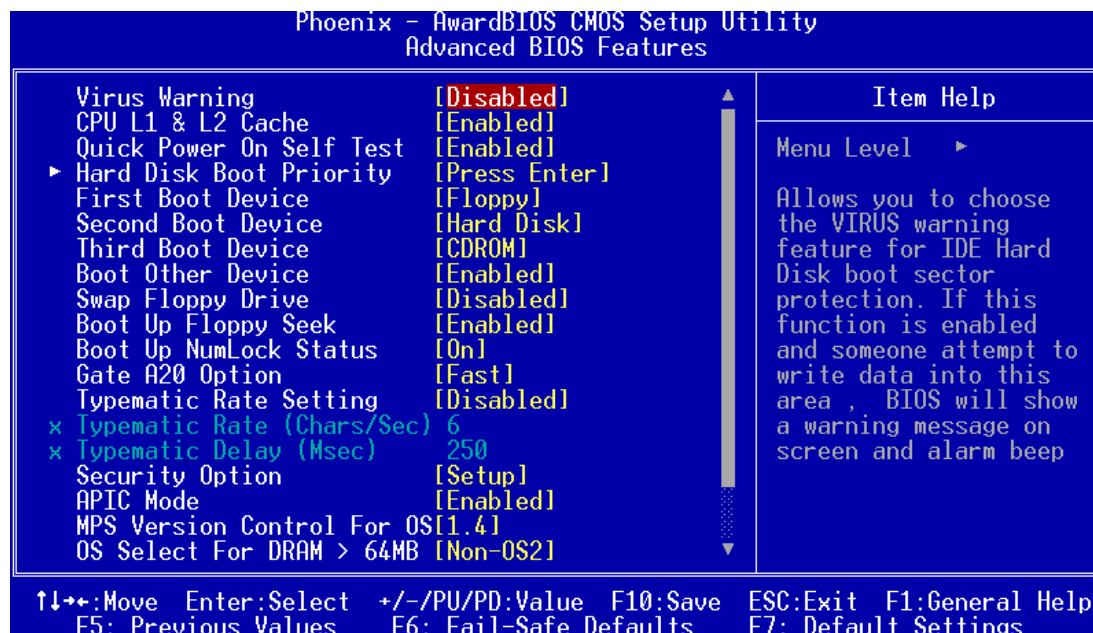
The following table describes the parameters found in this menu. Settings in **boldface** are the default and suggested settings.

| Parameter                  | Description  | Options   |
|----------------------------|--|---|
| Date                       | Lets you set the date following the weekday-month-day-year format  | Weekday: Sun, Mon...Sat<br>Month: Jan, Feb...Dec.<br>Day: 1 to 30<br>Year: 1980 to 2079 |
| Time                       | Lets you set the time following the hour-minute-second format  | Hour: 0 to 23<br>Minute: 0 to 59<br>Second: 0 to 59                                     |
| IDE Primary Channel Master | Allows you to configure the hard disk drive connected to the master port of IDE channel 1. To enter the IDE Primary Master setup, press [Enter].<br>The IDE CD-ROM is always automatically detected. | IDE Device Model Number:<br>None  |
| IDE Primary Channel Slave  | Allows you to configure the hard disk drive connected to the slave port of IDE channel 1. To enter the IDE Primary Slave setup, press [Enter].<br>The IDE CD-ROM is always automatically detected.   | IDE Device Model Number:<br>None  |

| Parameter                    | Description   | Options   |
|------------------------------|---|---|
| IDE Secondary Channel Master | Allows you to configure the hard disk drive connected to the master port of IDE channel 2. To enter the IDE Secondary Master setup, press [Enter]. The IDE CD-ROM is always automatically detected.   | IDE Device Model Number:<br>None  |
| IDE Secondary Channel Slave  | Allows you to configure the hard disk drive connected to the slave port of IDE channel 2. To enter the IDE Secondary Slave setup, press [Enter]. The IDE CD-ROM is always automatically detected.   | IDE Device Model Number:<br>None  |
| Drive A                      | Allows you to configure your floppy drive A.  | <b>1.44 MB, 3.5-inch</b><br>None<br>360 KB, 5.25-inch<br>1.2 MB, 5.25-inch<br>720 KB, 3.5-inch<br>2.88 MB, 3.5-inch |
| Drive B                      | Allows you to configure your floppy drive B.  | 1.44 MB, 3.5-inch<br><b>None</b><br>360 KB, 5.25-inch<br>1.2 MB, 5.25-inch<br>720 KB, 3.5-inch<br>2.88 MB, 3.5-inch |
| Video                        | This item specifies the type of video card in use. The default setting is VGA/EGA. Since current PCs use VGA only, this function is almost useless and may be disregarded in the future.  | <b>VGA/EGA</b><br>CGA40<br>CGA80<br>Mono  |
| Halt On                      | This parameter enables you to control the system stops in case of Power On Self Test errors (POST).   | <b>All Errors</b><br>No Errors<br>All but Keyboard<br>All but Diskette<br>All by Disk/Key                           |
| Base Memory                  | Refers to the option of memory that is available to standard DOS programs. DOS systems have an address space of 1MB, but the top 384KB (called high memory) is reserved for system use. This leaves 640 KB of conventional memory. Everything above 1MB is either extended or extended memory.                                    |   |
| Extended Memory              | Memory above and beyond the standard 1MB of base memory that DOS supports. Extended memory is only available in PCs with an Intel 80286 or later microprocessor. Extended memory is not configured in any special manner and is therefore unavailable to most DOS programs. However, MS Windows and OS/2 can use extended memory. |   |
| Total Memory                 | Total based and extended memory, and I/O ROM 384KB available to the system.   |   |

## Advanced BIOS Features

The following screen shows the Advanced BIOS Features:



The following table describes the parameters found in this menu. Settings in **boldface** are the default and suggested settings.

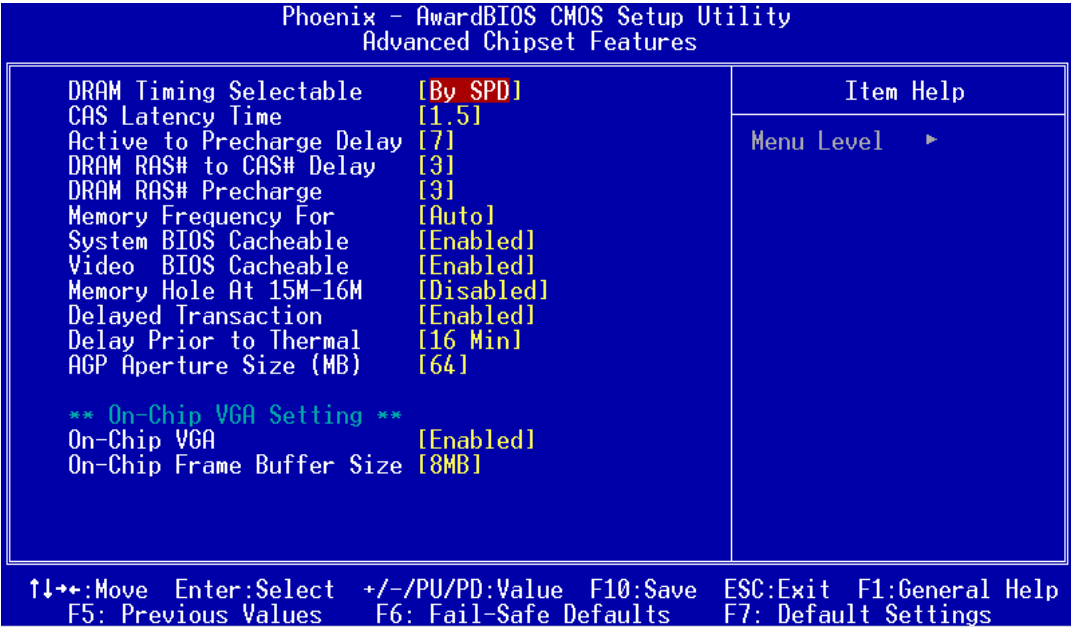
| Parameter                      | Description  | Options  |
|--------------------------------|--|--|
| Virus Warning                  | Allows you to set the virus warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. | Enabled<br><b>Disabled</b>   |
| Quick Power On Self Test       | This parameter speeds up POST by skipping some items that are normally checked.  | <b>Enabled</b><br>Disabled   |
| Hard Disk Boot Priority        |  |  |
| First/Second/Third Boot Device | The items allow you to set the sequence of boot device where BIOS attempts to load the disk operating system.  | Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP, LAN, Disabled (Disable this sequence ).<br>The sequence following the order of HDD, Floppy and CD-ROM is recommended. |
| Boot Other Device              | This parameter allows you to specify the system boot up search sequence.   | <b>Enabled</b><br>Disabled   |
| Swap Floppy Drive              | Setting to Enabled will swap floppy drive a: and b:.   | Enabled<br><b>Disabled</b>   |
| Boot Up Floppy Seek            | Setting to Enabled will make BIOS seek floppy drive a: before booting the system.  | Enabled<br><b>Disabled</b>   |

| Parameter                  | Description  | Options                              |
|----------------------------|--|--------------------------------------|
| Boot Up NumLock Status     | Sets the NumLock status when the system is powered on. Setting to On will turn on the NumLock key when the system is powered on. Setting to Off will allows users to use the arrow keys on the numeric keypad.   | <b>On</b><br>Off                     |
| Gate A20 Option            | This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value Fast is selected, the Gate A20 is controlled by port 92 or chipset specific method resulting in faster system performance. When Normal is selected, A20 is controlled by a keyboard controller or chipset hardware. | <b>Fast</b><br>Normal                |
| Typematic Rate Setting     | This item is used to enable or disable the typematic rate setting including Typematic Rate and Typematic Delay.  | Enabled<br><b>Disabled</b>           |
| Typematic Rate             | After Typematic Rate Setting is enabled, this item allows you to set the rate (characters/second) at which at keys are accelerated.  | Settings: 6,8,10,12,15,20,24 and 30. |
| Typematic Delay            | This item allows you to select the delay between when the key was first pressed and when the acceleration begins   | Settings: 250, 500, 750 and 1000.    |
| Security Option            | Specifies the type of BIOS password protection that is implemented. Setup means that the password prompt appears only when end users try to run Setup. System means that a password prompt appears every time when the computer is powered on or when end users try to run Setup.  | <b>Setup</b><br>System               |
| APIC Mode                  | This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources from the system.   | <b>Enabled</b><br>Disabled           |
| MPS Version Control for OS | This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system.   | <b>1.4</b><br>1.1                    |

# Advanced Chipset Features

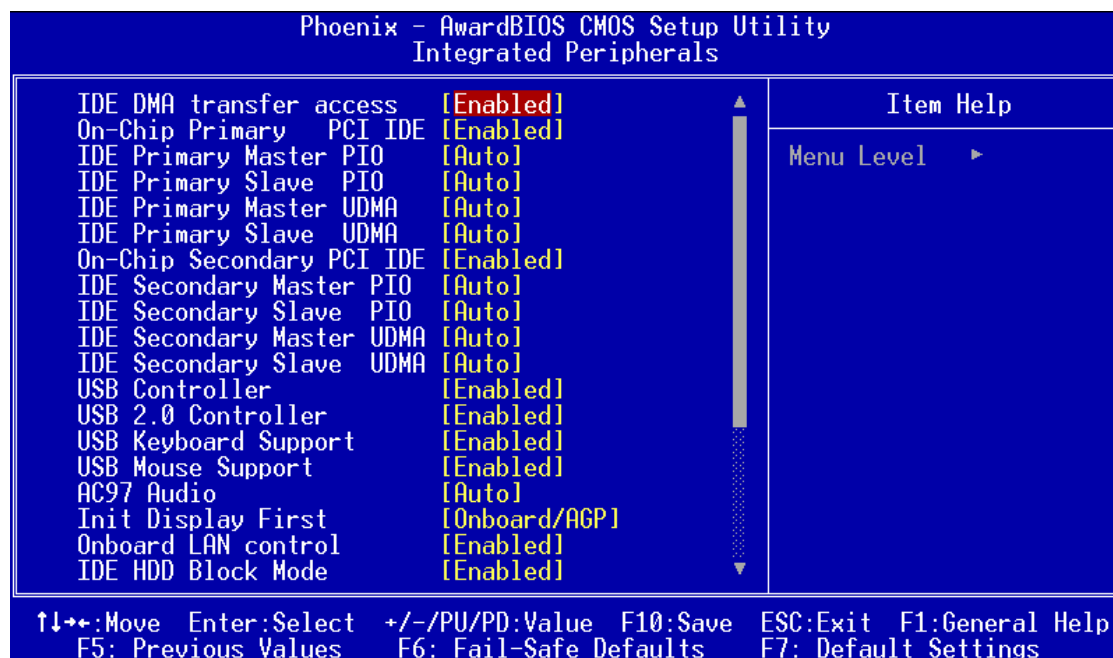
The advanced chipset features setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

**NOTE:** Change these settings only if you are familiar with the chipset.





## Integrated Peripherals



The following table describes each Integrated Peripherals parameters. Settings in boldface are the default and suggested values.

| Parameter  | Description   | Options   |
|--|---|---|
| Internal PCI/IDE   | This setting enables or disables the internal primary and secondary PCI & IDE controllers.  | <b>Both</b> , Disabled, Primary, Secondary      |
| IDE Primary Master PIO<br>IDE Primary Slave PIO<br>IDE Secondary Master PIO<br>IDE Secondary Slave PIO     | Setting these items to "Auto" activates the HDD speed auto-detect function. The PIO mode specifies the data transfer rate of the HDD. For example, mode 0 data transfer rate is 3.3MB/s, mode 1 is 5.2 MB/s, mode 2 is 8.3MB/s, mode 3 is 11.1 MB/s and mode 4 is 16.6MB/s. If your hard disk performance becomes unstable, you may manually try the slower mode. | <b>Auto</b> , mode 1, mode 2, mode 3 and mode 4 |
| Primary Master UltraDMA<br>Primary Slave UltraDMA<br>Secondary Master UltraDMA<br>Secondary Slave UltraDMA | These items allow you to set the Ultra DMA 33/66/100 mode supported by the hard disk drive connected to your primary and secondary IDE connectors.  | <b>Auto</b><br>Disables                         |
| IDE Burst Mode   | This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive.  | <b>Enabled</b><br>Disabled                      |
| AC97 Audio   | Enabling the on-die AC97 Auto if no add-on PCI audio device.  | <b>Auto</b><br>Disabled                         |
| System Share Memory Size   | For SiS650 chipset, the system shares memory to the onboard VGA card. This setting controls the exact memory size shared to the VGA card.   | 4, 8, 16, <b>32</b> , 64MB                      |

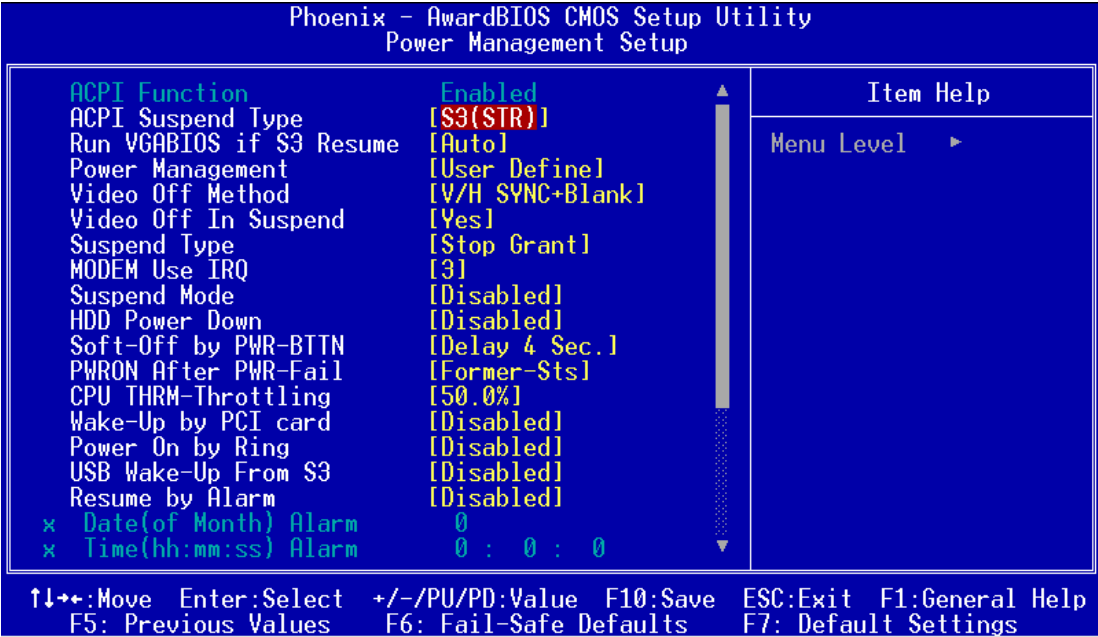
| Parameter              | Description  | Options                    |
|------------------------|--|----------------------------|
| USB Controller         | This item is used to enable or disable the on-chip USB.  | <b>Enabled</b><br>Disabled |
| USB Keyboard Support   | This item lets you enable or disable the USB keyboard driver within the onboard BIOS. The keyboard driver simulates legacy keyboard command and lets you use a USB keyboard during POST or after boot if you do not have a USB driver in the operating system.                   | <b>Enabled</b><br>Disabled |
| USB Mouse Support      | This item lets you enable or disable the USB mouse driver within the onboard BIOS. The keyboard driver simulates legacy mouse command and lets you use a USB mouse during POST or after boot if you do not have a USB driver in the operating system.                            | <b>Enabled</b><br>Disabled |
| Onboard LAN function   | To enable or disable the onboard LAN controller  | <b>Enabled</b><br>Disabled |
| Onboard LAN Boot ROM   | This setting determines whether or not to activate the boot ROM of the onboard LAN chip.   | <b>Enabled</b><br>Disabled |
| IDE HDD Block Mode     | Block mode is also called block transfer, multiple commands or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select "Enabled" for automatic detection of the optimal number of block read/write per sector the drive can support. | <b>Enabled</b><br>Disabled |
| Onboard FDC Controller | Setting this parameter to "Enable" allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to "Disabled" if you want to use a separate controller card.                                     | <b>Enabled</b><br>Disabled |



# Power Management Setup

The Power Management menu lets you configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

The following screen shows the Power Management parameters and their default settings:



The following table describes the parameters found in this menu. Settings in **boldface** are the default and suggested settings.

| Parameter         | Description  | Options                    |
|-------------------|--|----------------------------|
| ACPI Function     | This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/Me, select Enabled.  | <b>Enabled</b><br>Disabled |
| ACPI Suspend Type | This item specifies the power saving modes for ACPI function. S1(POS): The S1 sleep mode is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context. S3 (STR): The S3 sleep mode is a power-down state in which power is supplied only to essential components such as main memory and wake-capable devices and all system context is saved to main memory. The information stored in memory will be used to restore the PC to the previous state when an <i>wake-up</i> event occurs. S1&S3: Both S1 and S3 will be adopted. | <b>S3</b><br>S1<br>S1&S3   |

| Parameter            | Description   | Options   |
|----------------------|---|---|
| Video Off Option     | This item is to control the mode in which the monitor will shut down.<br>Always On: Always keep the monitor on.<br>Suspend --> Off: During suspend mode, the monitor will shut down. Susp, Stby --> During suspend or standby mode, the monitor will shut down. All Modes --> Off: The monitor is turned off during doze, standby or suspend mode.        | Always On<br>Suspend Off<br><b>Susp, Stby --&gt; Off</b><br>All Modes   |
| Video Off Method     | This item determines the manner in which the monitor is blanked.<br>V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. Blank Screen: This option only write blanks to the video buffer. DPMS Supported: Initial display power management signaling. | <b>V/H SYNC+Blank</b><br>Blank Screen<br>DPMS Supported   |
| Modem Use IRQ        | This setting names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of selected IRQ always awakens the system.  | <b>3, 4, 5, 7, 9, 10, 11, AUTO.</b>   |
| HDD Power Down       | If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.   | <b>Disabled</b><br>1~15 Mins  |
| Soft-off by PWR-BTTN | This feature allows users to configure the power button function.   | <b>Instant Off:</b> The power button functions as a normal power-on/-off button.<br><br><b>Delay 4 Sec.:</b> When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer will be turned off. |
| After PC Power Lost  | This item specifies when your system reboot after a power failure or interrupt occurs.  | <b>Power Off</b><br>Power On<br>Last State  |
| Power On by Ring     | When enabled, any fax/modem activity wakes up the system from suspend mode.   | <b>Disabled</b><br>Enabled  |
| Wake-Up by PCI Card  | Use PCI Wake-up system. PCI must meet PCI 2.2 specification.  | <b>Disabled</b><br>Enabled  |
| Resume by Alarm      | Use this option to set the date and time for your computer to boot up.<br>Date (of month) Alarm* - Indicate the month for system to boot up. Set it to 0 if you want to boot up everyday.<br>Time (hh:mm:ss) Alarm* - Indicate the hour, minute and second for system to boot up.   | <b>Disabled</b><br>Enabled<br><br>*Set Resume by Alarm to Enable, then press "Enter" to show the range of Date and Time Alarm.  |

# PnP/PCI Configuration

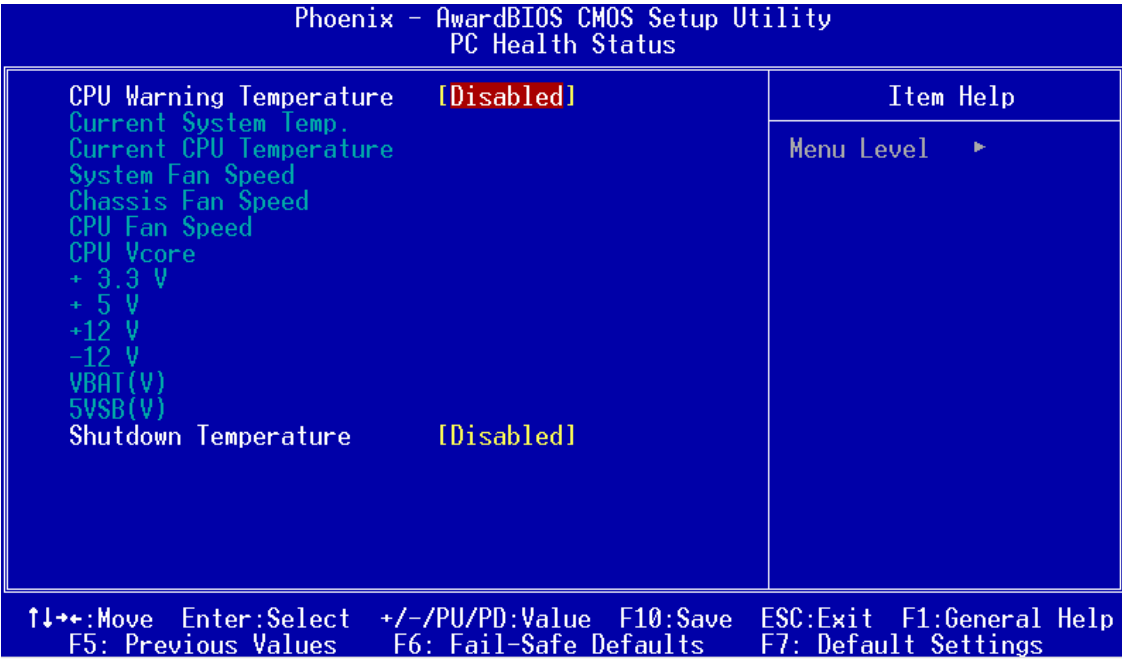
| Phoenix - AwardBIOS CMOS Setup Utility<br>PnP/PCI Configurations   |                     |   |
|--|---------------------|---|
| Reset Configuration Data   | <b>[Disabled]</b>   | Item Help   |
| Resources Controlled By  | <b>[Auto(ESCD)]</b> | Menu Level ▶<br><br>Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot |
| x IRQ Resources  | Press Enter         |   |
| PCI/VGA Palette Snoop  | <b>[Disabled]</b>   |   |
| ↑↓↔:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5: Previous Values F6: Fail-Safe Defaults F7: Default Settings |                     |   |

The following table describes the parameters found in this menu. Settings in **boldface** are the default and suggested settings.

| Parameter                | Description  | Options  |
|--------------------------|--|--|
| Reset Configuration Data | Selecting "Enabled" to reset Extended System Configuration Data (ESCD) only if you installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. Otherwise, you should leave it unchanged.  | <b>Disabled</b><br>Enabled   |
| Resources Controlled By  | This BIOS can automatically configure all of the boot and Plug and Play compatible devices. You can also set it as Manual and go into each of the sub menu to choose specific resources.   | <b>Auto (ESCD)</b><br>Manual   |
| IRQ Resources            | The items are adjustable only when "Resources Controlled By" is set to Manual. By pressing "Enter" to access the sub menu.   | PCI Device<br>Reserved   |
| PCI/VGA Palette Snoop    | Disabled - Data read or written by the CPU is only directed to the PCI VGA device's palette registers.<br><br>Enabled - Data read or written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both VGA devices to be identical. | <b>Disabled</b><br>Enabled<br><br>*If any ISA bus adapter in the system requires VGA Palette snooping, the setting must be set to "Enabled". |

**NOTE:** It is strongly recommended that only experienced users should make any changes to the default settings.

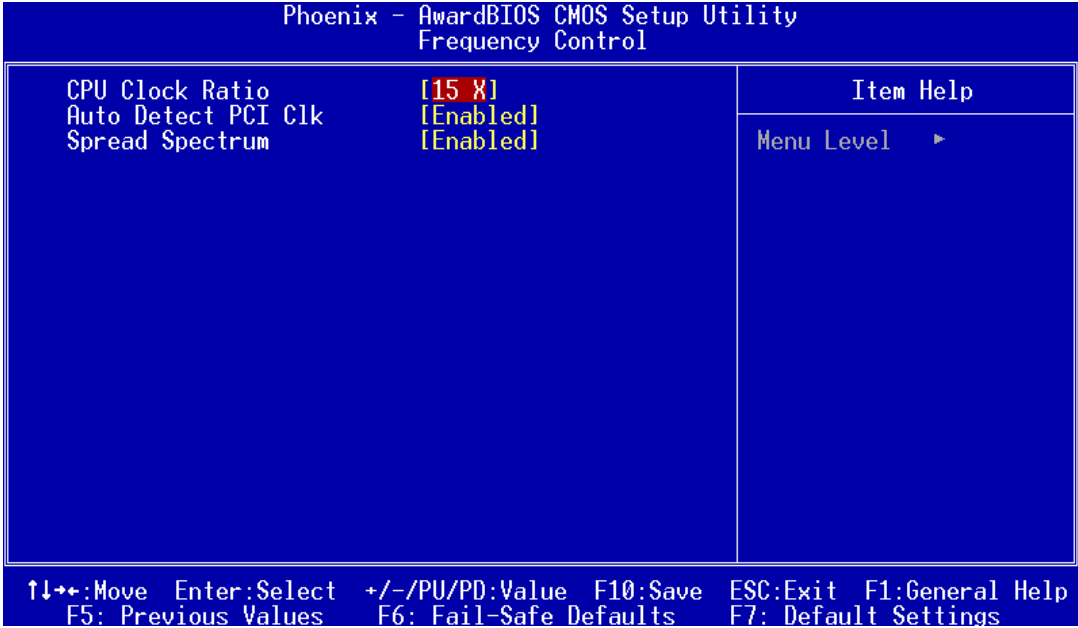
# PC Health Status



The following table describes the parameters found in this menu:

| Parameter  | Description   | Options |
|--|---|---------|
| Shutdown Temperature   | This option is for setting the shutdown temperature level for the processor. When the processor reaches the temperature you set, the ACPI-aware system will be shut down. |         |
| Current System/CPU Temperature, CPU/ System fan, Vcore, ect. | These items display the current status of all of the mainboard hardware devices/components such as CPU voltages, temperatures and all fans' speeds.                       |         |

# Frequency Control



The following table describes the parameters found in this menu. Settings in **boldface** are the default and suggested settings.

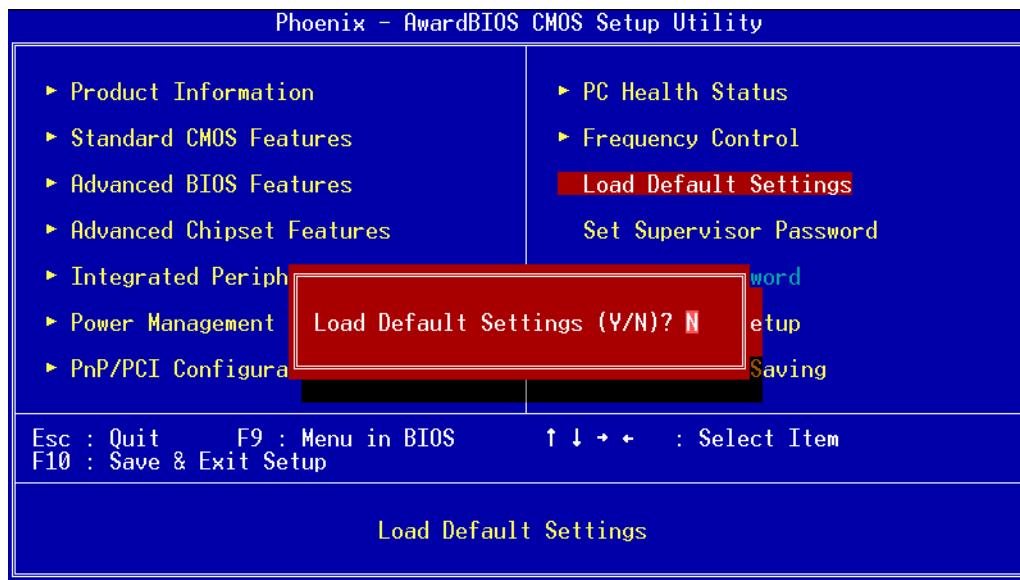
| Parameter           | Description  | Options             |
|---------------------|--|---------------------|
| CPU Clock Ratio     | If the CPU Ratio is set to Manual, end users can choose a suitable ratio to support the CPU.   | 8x to 50x           |
| Auto Detect PCI Clk | This option allows you to enable/disable the feature of auto detecting the clock frequency of the installed DIMM/PCI bus.  | Enabled<br>Disabled |
| Spread Spectrum     | When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at Disabled for optimal system stability and performance. But if you are plagued by EMI, setting to Enabled for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed which may just cause your overlock ed processor to lock up. |                     |



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## Load Default Settings

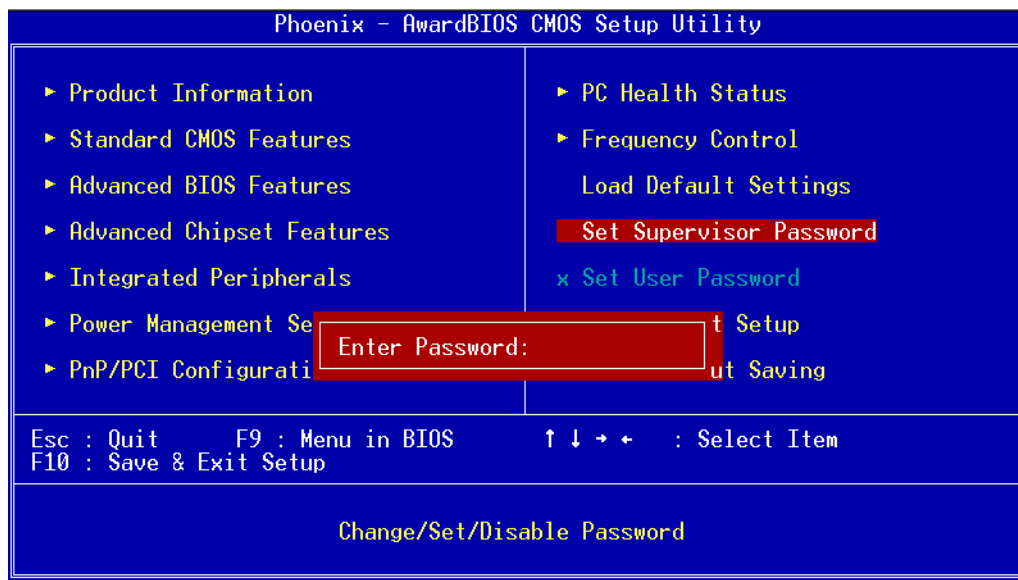
The default settings are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. When you select the item, a message as below appears:



Pressing Y (Yes) loads the BIOS default values for the most stable system performance.

## Set Supervisor/User Password

When you choose to set supervisor password, a message as below will appear on the screen:



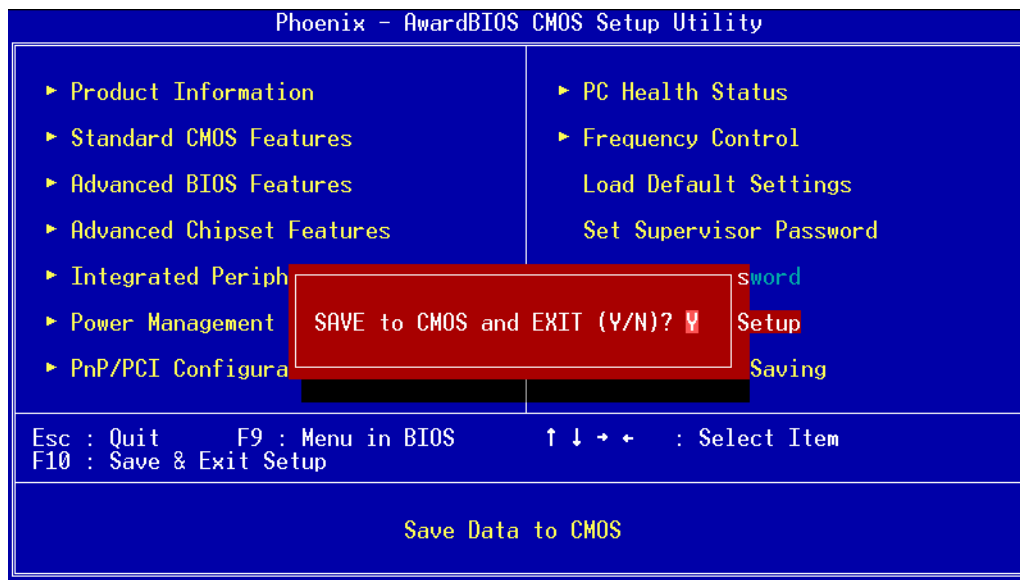
At the prompt, type your password. Your password can be up to **six** characters in length. After typing the password, press “Enter”. At the next prompt, re-type your password and press “Enter” again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press “Enter” when prompted to enter the password. The following screen will display a message confirming that the password has been disabled.

---

## Save & Exit Setup/Exit Without Saving

If you select Save and Exit Setup, you will exit the BIOS utility. The following dialogue box will appear.



Select Y (Yes) to exit Setup. Select N (No) to return to the main menu.

If you select Exit Without Saving, you will discard all the changes you made and exit Setup.



## Machine Disassembly and Replacement

---

Please also refer to the Acer Power SP Service CD for the assembly/disassembly procedure.

To disassemble the computer, you need the following tools:

- ☐ Wrist grounding strap and conductive mat for preventing electrostatic discharge.
- ☐ Wire cutter.
- ☐ Phillips screwdriver (may require different size).

**NOTE:** The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatches when putting back the components.

---

## General Information

### Before You Begin

Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.

---

## Standard Disassembly Procedure

This section tells you how to disassemble the system when you need to perform system service. Please also refer to the disassembly video, if available.

**CAUTION:** Before you proceed, make sure you have turned off the system and all peripherals connected to it.

### Opening the System

1. Place the system unit on a flat, steady surface.



2. Turn the housing back, and remove the screws as shown here.



3. Slide out the side door.



### Removing the Front Panel

1. Release the six latches behind the front bezel.
2. Remove the bezel by following the instruction below.



### Removing the CD-ROM, the Floppy and the HDD

1. Detach the modem card.



2. Disconnect the relevant cables.



3. Press the latch and remove the CD-ROM drive.



4. Press the latch and remove the floppy drive.



5. Press the latch again to release the hard disk module.



6. Detach the HDD from the bracket.



## Removing the Power Supply

1. Remove the screws as shown here.



2. Remove the power supply.





## Removing the Heatsink and the CPU

1. Disconnect the Pentium 4 CPU power cable.



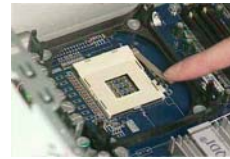
2. Release the two heatsink latches.



3. Remove the heatsink module.



4. Remove the CPU by following the instructions here.



## Removing the Daughter Board

1. Remove the screw as shown here.



2. Detach the USB cables from the daughter board.



## Troubleshooting

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This chapter provides troubleshooting information for the Acer Power SP:

- ☐ Power-On Self-Test (POST)
- ☐ Index of Error Messages
- ☐ Index of Error Codes and Error Beeps
- ☐ Index of Error Symptoms
- ☐ Undetermined Problems

---

## Power-On Self-Test (POST)

Each time you turn on the system, the Power-on Self Test (POST) is initiated. Several items are tested during POST, but is for the most part transparent to the user.

The Power-On Self Test (POST) is a BIOS procedure that boots the system, initializes and diagnoses the system components, and controls the operation of the power-on password option. If POST discovers errors in system operations at power-on, it displays error messages on screen, generates a check point code at port 80h or even halts the system if the error is fatal.

The main components on the main board that must be diagnosed and/or initialized by POST to ensure system functionality are as follows:

- ☐ Microprocessor with built-in numeric co-processor and cache memory subsystem
- ☐ Direct Memory Access (DMA) controller
- ☐ Interrupt system
- ☐ Three programmable timers
- ☐ ROM subsystem
- ☐ RAM subsystem
- ☐ RTC RAM subsystem and real time clock/calendar with battery backup
- ☐ Onboard serial interface controller
- ☐ Onboard parallel interface controller
- ☐ Embedded hard disk interface and one diskette drive interface
- ☐ Keyboard and auxiliary device controllers
- ☐ I/O ports
  - ☐ PS/2-compatible mouse port
  - ☐ PS/2-compatible keyboard port
- ☐ Serial ports
- ☐ Parallel ports
- ☐ USB port

---

## POST Check Points

When POST executes a task, it uses a series of preset numbers called check point to be latched at port 80h, indicating the stages it is currently running. This latch can be read and shown on a debug board.

The following table describes the Acer common tasks carried out by POST. A unique check point number represents each task.

| <i><b>Checkpoint</b></i> | <i><b>Description</b></i>  |
|--------------------------|--|
| CFh                      | Test CMOS R/W functionality  |
| C0h                      | Early chipset initialization: <ul style="list-style-type: none"><li>• Disable shadow RAM</li><li>• Disable L2 Cache (socket 7 or below)</li><li>• Program basic chipset registers</li></ul>  |
| C1h                      | Detect memory <ul style="list-style-type: none"><li>• Auto-detection of DRAM size, type and ECC.</li><li>• Auto-detection of L2 cache (socket 7 or below)</li></ul>  |
| C3h                      | Expand compressed BIOS code to DRAM  |
| C5h                      | Call chipset hook to copy BIOS back to E000 & F000 shadow RAM  |
| 0h1                      | Expand the Xgroup codes locating in physical address 1000:0  |
| 02h                      | Reserved   |
| 03h                      | Initial Superio_Early_Init switch  |
| 04h                      | Reserved   |
| 05h                      | <ol style="list-style-type: none"><li>1. Blank out screen</li><li>2. Clear CMOS error flag</li></ol>   |
| 06h                      | Reserved   |
| 07h                      | <ol style="list-style-type: none"><li>1. Clear 8042 interface</li><li>2. Initialize 8042 self-test</li></ol>   |
| 08h                      | <ol style="list-style-type: none"><li>1. Test special keyboard controller for Winbond 977 series Super I/O chips</li><li>2. Enable keyboard interface</li></ol>  |
| 09h                      | Reserved   |
| 0Ah                      | <ol style="list-style-type: none"><li>1. Disable PS/2 mouse interface (optional)</li><li>2. Auto detect ports for keyboard &amp; mouse followed by a port &amp; interface swap (optional)</li><li>3. Reset keyboard for Winbond 977 series Super I/O chips</li></ol> |
| 0Bh                      | Reserved   |
| 0Ch                      | Reserved   |
| 0Dh                      | Reserved   |
| 0Eh                      | Test F000h segment shadow to see whether it is R/W-able or not. If test fails. keep beeping the speaker.   |
| 0Fh                      | Reserved   |

| <b><i>Checkpoint</i></b> | <b><i>Description</i></b>  |
|--------------------------|--|
| 10h                      | Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.  |
| 11h                      | Reserved   |
| 12h                      | Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.  |
| 13h                      | Reserved   |
| 14h                      | Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.   |
| 15h                      | Reserved   |
| 16h                      | Initial onboard clock generator if Early_Init_Onboard_Generator is defined. See also POST 26h.   |
| 17h                      | Reserved   |
| 18h                      | Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).  |
| 19h                      | Reserved   |
| 1Ah                      | Reserved   |
| 1Bh                      | Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.   |
| 1Ch                      | Reserved   |
| 1Dh                      | Initial EARLY_PM_INIT switch   |
| 1Eh                      | Reserved   |
| 1Fh                      | Load keyboard matrix (notebook platform)   |
| 20h                      | Reserved   |
| 21h                      | HPM Initialization (notebook platform)   |
| 22h                      | Reserved   |
| 23h                      | <ol style="list-style-type: none"> <li>1. Check validity of RTC value:<br/>e.g. a value of 5Ah is an invalid value for RTC minute.</li> <li>2. Load CMOS settings into BIOS stack. If Smos checksum fails, use default value instead.</li> </ol>                                       |
| 24h                      | Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.   |
| 25h                      | Early PCI Initialization: <ul style="list-style-type: none"> <li>• Enumerate PCI bus number</li> <li>• Assign memory &amp; I/O resource</li> <li>• Search for a valid VGA device &amp; VGA BIOS, and put it into C000:0</li> </ul>   |
| 26h                      | <ol style="list-style-type: none"> <li>1. If Early_Init_Onboard_Generator is not defined Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots.</li> <li>2. Init onboard PWM</li> <li>3. Init onboard H/W monitor devices</li> </ol> |
| 27h                      | Initialize INT 09 buffer   |
| 28h                      | Reserved   |

| <b><i>Checkpoint</i></b> | <b><i>Description</i></b>   |
|--------------------------|---|
| 29h                      | <ol style="list-style-type: none"> <li>1. Program CPU internal MTRR (P6 &amp; PII) for 0-640K memory address.</li> <li>2. Initialize the APIC for Pentium class CPU</li> <li>3. Program early chipset according to CMOS setup.<br/>Example: onboard IDE controller.</li> <li>4. Measure CPU speed.</li> </ol> |
| 2Ah                      | Reserved  |
| 2Bh                      | Invoke Video BIOS   |
| 2Ch                      | Reserved  |
| 2Dh                      | <ol style="list-style-type: none"> <li>1. Initialize double-byte language font (Optional)</li> <li>2. Put information on screen display, including Award title, CPU type, CPU speed, full screen logo.</li> </ol>   |
| 2Eh                      | Reserved  |
| 2Fh                      | Reserved  |
| 30h                      | Reserved  |
| 31h                      | Reserved  |
| 32h                      | Reserved  |
| 33h                      | Reset keyboard if Early_Reset_KB is defined e.g. Winbond 977 series Super I/O chips. See also POST 63h  |
| 34h                      | Reserved  |
| 35h                      | Test DMA Channel 0  |
| 36h                      | Reserved  |
| 37h                      | Test DMA Channel 1  |
| 38h                      | Reserved  |
| 39h                      | Test DMA page registers   |
| 3Ah                      | Reserved  |
| 3Bh                      | Reserved  |
| 3Ch                      | Test 8254   |
| 3Dh                      | Reserved  |
| 3Eh                      | Test 8259 interrupt mask bits for channel 1   |
| 3Fh                      | Reserved  |
| 40h                      | Test 8259 interrupt mask bits for channel 2   |
| 41h                      | Reserved  |
| 42h                      | Reserved  |
| 43h                      | Test 8259 functionality   |
| 44h                      | Reserved  |
| 45h                      | Reserved  |
| 46h                      | Reserved  |
| 47h                      | Initialize EISA slot  |
| 48h                      | Reserved  |
| 49h                      | <ol style="list-style-type: none"> <li>1. Calculate total memory by testing the last double word of each 64K page.</li> <li>2. Program write allocation for AMD K5 CPU.</li> </ol>  |

| <i><b>Checkpoint</b></i> | <i><b>Description</b></i>  |
|--------------------------|--|
| 4Ah                      | Reserved   |
| 4Bh                      | Reserved   |
| 4Ch                      | Reserved   |
| 4Dh                      | Reserved   |
| 4Eh                      | <ol style="list-style-type: none"> <li>1. Program MTRR of M1 CPU</li> <li>2. Initialize L2 cache for P6 class CPU &amp; program CPU with proper cacheable range.</li> <li>3. Initialize the APIC for P6 class CPU.</li> <li>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.</li> </ol> |
| 4Fh                      | Reserved   |
| 50h                      | Initialize USB Keyboard & Mouse  |
| 51h                      | Reserved   |
| 52h                      | Test all memory (clear all extended memory to 0)   |
| 53h                      | Clear password according to H/W jumper (Optional)  |
| 54h                      | Reserved   |
| 55h                      | Display number of processors (multi-processor platform)  |
| 56h                      | Reserved   |
| 57h                      | <ol style="list-style-type: none"> <li>1. Display PnP logo</li> <li>2. Early ISA PnP initialization - Assign CSN to every ISA PnP device</li> </ol>  |
| 58h                      | Reserved   |
| 59h                      | Initialize the combined Trend Anti-Virus code  |
| 5Ah                      | Reserved   |
| 5Bh                      | (Optional Feature)<br>Show message for entering AWDFLASH.EXE from FDD (optional)   |
| 5Ch                      | Reserved   |
| 5Dh                      | <ol style="list-style-type: none"> <li>1. Initialize Init_Onboard_Super_IO</li> <li>2. Initialize Init_Onboard_AUDIO</li> </ol>  |
| 5Eh                      | Reserved   |
| 5Fh                      | Reserved   |
| 60h                      | Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.  |
| 61h                      | Reserved   |
| 62h                      | Reserved   |
| 63h                      | Reset keyboard if Early_Reset_KB is not defined.   |
| 64h                      | Reserved   |
| 65h                      | Initialize PS/2 Mouse  |
| 66h                      | Reserved   |
| 67h                      | Prepare memory size information for function call:<br>INT 15h ax=E820h   |
| 68h                      | Reserved   |



| <i>Checkpoint</i> | <i>Description</i>  |
|-------------------|---|
| 69h               | Turn on L2 cache  |
| 6Ah               | Reserved  |
| 6Bh               | Program chipset registers according to items described in Setup & Auto-configuration table  |
| 6Ch               | Reserved  |
| 6Dh               | <ol style="list-style-type: none"> <li>1. Assign resources to all ISA PnP devices.</li> <li>2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "Auto".</li> </ol>                     |
| 6Eh               | Reserved  |
| 6Fh               | <ol style="list-style-type: none"> <li>1. Initialize floppy controller</li> <li>2. Set up floppy related fields in 40:hardware</li> </ol>   |
| 70h               | Reserved  |
| 71h               | Reserved  |
| 72h               | Reserved  |
| 73h               | Reserved  |
| 74h               | Reserved  |
| 75h               | Detect & install all IDE device: HDD, LS120, ZIP, CDROM...  |
| 76h               | (Optional feature)<br>Enter AWDFLASH.EXE if:<br>- AWDFLASH.EXE is found in floppy drive.<br>- ALT+F2 is prrsed.   |
| 77h               | Detect serial ports & parallel ports  |
| 78h               | Reserved  |
| 79h               | Reserved  |
| 7Ah               | Detect & install co-processor   |
| 7Bh               | Reserved  |
| 7Ch               | Init HDD write protect  |
| 7Dh               | Reserved  |
| 7Eh               | Reserved  |
| 7Fh               | Switch back to text mode if full screen logo is supported.<br>- If errors occur, report errors & wait for keys<br>- If no errors occur or F1 key is pressed to continue:<br>Clear EPA or customization logo.              |
| 80h               | Reserved  |
| 81h               | Reserved  |
| 82h               | <ol style="list-style-type: none"> <li>1. Call chipset power management hook.</li> <li>2. Recover the text fond used by EPA logo (not for full screen logo).</li> <li>3. If password is set, ask for password.</li> </ol> |
| 83h               | Save all data in stack back to CMOS   |
| 84h               | Initialize ISA PnP boot devices   |
| 85h               | <ol style="list-style-type: none"> <li>1. USB final initialization</li> <li>2. Switch screen back to text mode</li> </ol>   |

| <i><b>Checkpoint</b></i> | <i><b>Description</b></i>   |
|--------------------------|---|
| 86h                      | Reserved  |
| 87h                      | NET PC: Build SYSID structure   |
| 88h                      | Reserved  |
| 89h                      | 1. Assign IRQs to PCI devices.<br>2. Set up ACPI table at top of the memory.  |
| 8Ah                      | Reserved  |
| 8Bh                      | 1. Invoke all ISA adapter ROMs<br>2. Invoke all PCI ROMs (except VGA)   |
| 8Ch                      | Reserved  |
| 8Dh                      | 1. Enable/Disable Parity Check according to CMOS setup.<br>2. APM Initialization  |
| 8Eh                      | Reserved  |
| 8Fh                      | Clear noise if IRQs   |
| 90h                      | Reserved  |
| 91h                      | Reserved  |
| 92h                      | Reserved  |
| 93h                      | Read HDD boot sector information for Trend Anti-Virus code  |
| 94h                      | 1. Enable L2 cache<br>2. Program Daylight Saving<br>3. Program boot up speed<br>4. Chipset final initialization<br>5. Power management final initialization<br>6. Clear screen & display summary table<br>7. Program K6 write allocation<br>8. Program P6 class write combining |
| 95h                      | Update keyboard LED & typematic rate  |
| 96h                      | 1. Build MP table<br>2. Build & update ESCD<br>3. Set CMOS century to 20h or 19h<br>4. Load CMOS time into DOS timer tick<br>5. Build MSIRQ routing table   |
| FFh                      | Boot attempt (INT 19h)  |

## POST Error Messages List

If you cannot run the diagnostics program tests but did receive a POST error message, use “POST Error Messages List” to diagnose system problems. If you did not receive any error message, look for a description of your error symptoms in “Error Symptom List”.

**NOTE:** When you have deemed it necessary to replace an FRU, and have done so, you must run a total system check to ensure that no other activity has been affected by the change. This system check can be done through the diagnostics program.

**NOTE:** Check all power supply voltages, switch, and jumper settings before you replace the main board. Also check the power supply voltages if you have a “system no-power” condition.

**NOTE:** To diagnose a problem, first find the BIOS error messages in the left column. If directed to a check procedure, replace the FRU indicated in the check procedure. If no check procedure is indicated, the first Action/FRU listed in right column is the most likely cause.

| BIOS Messages  | Action/FRU   |
|--|--|
| I/O Parity Error   | 1. System board  |
| CPU Clock Mismatch   | 1. Enter BIOS Setup and load the default settings.<br>2. Ensure BIOS setting for processor is set correctly.   |
| Real Time Clock Error<br>CMOS Battery Bad<br>CMOS Checksum Error   | 1. Enter BIOS Setup and load the default settings.<br>2. RTC Battery.<br>3. System Board.  |
| Equipment Configuration Error  | 1. Ensure the system configuration set in BIOS Setup is correct.<br>2. Enter BIOS Setup and load the default settings.<br>3. RTC battery.<br>4. System board.                            |
| System Management Memory Bad<br>Memory Error at MMMM:SSSS:OOOOh  | 1. Insert the memory modules in the DIMM sockets properly, then reboot the system.<br>2. Memory module.<br>3. System board.  |
| RAM Parity Error   | 1. Enter BIOS Setup to disable parity check.<br>2. Memory module<br>3. System board  |
| PS/2 Keyboard Error or Keyboard Not Connected<br>PS/2 Keyboard Interface Error<br>PS/2 Keyboard Locked         | 1. Re-connect PS/2 keyboard and mouse.<br>2. Enter BIOS Setup and load the default settings.<br>3. PS/2 keyboard<br>4. PS/2 mouse<br>5. System board                                     |
| Onboard xxx... Conflict(s)   | 1. Enter BIOS Setup and load the default settings.<br>2. Remove all adapter cards that are NOT factory-installed, then reboot the system.  |
| Floppy Disk Controller Error<br>Floppy Drive A Error<br>Floppy Drive B Error                                   | 1. Diskette drive cable/connection.<br>2. Diskette drive.<br>3. System board   |
| On Board Parallel Port Conflict(s)<br>On Board Serial Port 1 Conflict(s)<br>On Board Serial Port 2 Conflict(s) | 1. Enter BIOS Setup and load the default settings.<br>2. Remove all adapter cards that are NOT factory-installed, then reboot the system.  |
| Floppy Drive(s) Write Protected<br>Hard Disk Drive(s) Write Protected  | 1. Ensure that the diskette drive is not set to [Write Protected] in the Security Options in BIOS Setup.<br>2. Load default settings in Setup.   |
| IDE Drive 0 Error<br>IDE Drive 1 Error<br>IDE Drive 2 Error<br>IDE Drive 3 Error                               | 1. Enter BIOS Setup and load the default settings.<br>2. Check IDE drive jumper.<br>3. IDE hard disk drive power.<br>4. IDE hard disk drive cable/connection.<br>5. IDE hard disk drive. |

| BIOS Messages   | Action/FRU   |
|---|--|
| IRQ Setting Error<br>Expansion ROM Allocation Fail<br>I/O Resource Conflict(s)<br>Memory Resource Conflict(s) | <ol style="list-style-type: none"> <li>1. Load default settings in Setup.</li> <li>2. Enter BIOS Setup and set the <b>Reset Resource Assignments</b> of the <b>PnP/PCI Options</b> to Yes, then reboot the system.</li> <li>3. Remove all adapter cards that are NOT factory-installed, then reboot the system</li> </ol>  |
| PCI Device Error  | <ol style="list-style-type: none"> <li>1. Load default settings in Setup.</li> <li>2. Enter BIOS Setup and set the <b>Reset Resource Assignments</b> of the <b>PnP/PCI Options</b> to Yes, then reboot the system.</li> <li>3. Remove all adapter cards that are NOT factory-installed, then reboot the system.</li> </ol> |
| PS/2 Pointing Device Interface Error<br>PS/2 Pointing Device Error  | <ol style="list-style-type: none"> <li>1. Re-connect PS/2 keyboard and mouse.</li> <li>2. Enter BIOS Setup and load the default settings.</li> <li>3. PS/2 mouse</li> <li>4. PS/2 keyboard</li> <li>5. System board</li> </ol>   |
| DMI Table Was Destroyed   | <ol style="list-style-type: none"> <li>1. Flash BIOS</li> </ol>  |
| Press "DEL" key to enter Setup or F1 key to continue  | <ol style="list-style-type: none"> <li>1. Press DEL to enter Setup and reconfigure the system.</li> </ol>  |
| Press ESC to turn off NMI, or any key to reboot   | <ol style="list-style-type: none"> <li>1. Press ESC to reject NMI error or press any other key to reboot the system.</li> </ol>  |
| Insert system diskette and press ENTER key to reboot  | <ol style="list-style-type: none"> <li>1. Insert a bootable disk into the floppy disk drive or remove this disk if a hard disk is installed.</li> </ol>  |

## Error Symptoms List

**NOTE:** To diagnose a problem, first find the error symptom in the left column. If directed to a check procedure, replace the FRU indicated in the check procedure. If no check procedure is indicated, the first Action/FRU listed in right column is the most likely cause

| Error Symptom  | Action/FRU   |
|--|--|
| <b>Processor / Processor Fan</b>   |  |
| <b>NOTE:</b> Normally, the processor fan should be operative, and the processor clock setting should be exactly set to match its speed requirement before diagnosing any processor problems. |  |
| Processor fan does not run but power supply fan runs.  | <ol style="list-style-type: none"> <li>1. Ensure the system is not in power saving mode. See "Power Management" in chapter 2.</li> <li>2. With the system power on, measure the voltage of processor fan connector. Its reading should be +12Vdc.</li> <li>3. System board.</li> </ol>                 |
| Processor test failed.   | <ol style="list-style-type: none"> <li>1. Processor</li> <li>2. System board</li> </ol>  |
| <b>System Board and Memory</b>   |  |
| <b>NOTE:</b> Ensure the memory modules are installed properly and the contact leads are clean before diagnosing any system problems.   |  |
| Memory test failed.  | <ol style="list-style-type: none"> <li>1. See "Memory"</li> <li>2. System board</li> </ol>   |
| Incorrect memory size shown or repeated during POST.   | <ol style="list-style-type: none"> <li>1. Insert the memory modules in the DIMM sockets properly, then reboot the system.</li> <li>2. Memory module.</li> <li>3. System board.</li> </ol>  |
| System works but fails to enter power saving mode when the Power Management Mode is set to Enabled, and power saving timer set in BIOS has elapsed.  | <ol style="list-style-type: none"> <li>1. Enter BIOS Setup and load default settings. In Windows 98, check settings in Power Management Property of Control Panel.</li> <li>2. Reload software from Recovery CD.</li> </ol>  |
| System hangs before system boot.   | <ol style="list-style-type: none"> <li>1. See "Index of Symptoms"</li> <li>2. See "Undetermined Problems"</li> </ol>   |
| System hangs after system boot.  | <ol style="list-style-type: none"> <li>1. Execute a system test and set it to stop at "Halt on Error" to see the potential cause of the problem.</li> <li>2. See "Undetermined Problems".</li> </ol>   |
| Blinking cursor only; system does not work.  | <ol style="list-style-type: none"> <li>1. Diskette/IDE drive connection/cables</li> <li>2. Diskette/IDE disk drives</li> <li>3. See "Undetermined Problems".</li> <li>4. System board</li> </ol>   |
| <b>Diskette Drive</b>  |  |
| <b>NOTE:</b> Ensure the diskette drive is configured correctly in BIOS Setup and its read/write head is clean before diagnosing any diskette drive problems.                                 |  |
| Media and drive are mismatched.  | <ol style="list-style-type: none"> <li>1. Ensure the diskette drive is configured correctly in the Disk Drives of BIOS Setup.</li> <li>2. Ensure the diskette drive is correctly formatted.</li> <li>3. Diskette drive connection/cable</li> <li>4. Diskette drive</li> <li>5. System board</li> </ol> |
| Diskette drive does not work.  | <ol style="list-style-type: none"> <li>1. Ensure the diskette drive is not set to None in the Disk Drives of BIOS Setup.</li> <li>2. Diskette drive power</li> <li>3. Diskette drive connection/cable</li> <li>4. Diskette drive</li> <li>5. System board</li> </ol>                                   |

| Error Symptom   | Action/FRU   |
|---|--|
| Diskette drive read/write error.  | <ol style="list-style-type: none"> <li>1. Diskette.</li> <li>2. Ensure the diskette drive is not set to <code>Write protect</code> in the Security Options of BIOS Setup.</li> <li>3. Diskette drive cable.</li> <li>4. Diskette drive.</li> <li>5. System board.</li> </ol> |
| Diskette drive LED comes on for more than 2 minutes when reading data.  | <ol style="list-style-type: none"> <li>1. Diskette</li> <li>2. Diskette drive connection/cable</li> <li>3. Diskette drive</li> <li>4. System board</li> </ol>  |
| Diskette drive LED fails to light, and the drive is unable to access for more than 2 minutes.   | <ol style="list-style-type: none"> <li>1. Diskette</li> <li>2. Diskette drive power</li> <li>3. Diskette drive connection/cable</li> <li>4. Diskette drive</li> <li>5. System board</li> </ol>   |
| Diskette drive test failed.   | <ol style="list-style-type: none"> <li>1. Diskette</li> <li>2. Diskette drive</li> <li>3. Diskette drive cable</li> <li>4. System board</li> </ol>   |
| <b>Hard Disk Drive</b>  |  |
| <b>NOTE:</b> Ensure hard disk drive is configured correctly in BIOS Setup, cable/jumper are set correctly before diagnosing any hard disk drive problems.                               |  |
| Hard disk drive test failed.  | <ol style="list-style-type: none"> <li>1. Enter BIOS Setup and Load default settings.</li> <li>2. Hard disk drive cable.</li> <li>3. Hard disk drive.</li> <li>4. System board.</li> </ol>   |
| Hard disk drive cannot format completely.   | <ol style="list-style-type: none"> <li>1. Enter BIOS Setup and Load default settings.</li> <li>2. Hard disk drive cable.</li> <li>3. Hard disk drive.</li> <li>4. System board.</li> </ol>   |
| Hard disk drive has write error.  | <ol style="list-style-type: none"> <li>1. Enter BIOS Setup and Load default settings.</li> <li>2. Hard disk drive.</li> </ol>  |
| Hard disk drive LED fails to light, but system operates normally.   | <ol style="list-style-type: none"> <li>1. With the system power on, measure the voltage of hard disk LED connector.</li> <li>2. Hard drive LED cable.</li> </ol>   |
| <b>CD/DVD-ROM Drive</b>   |  |
| <b>NOTE:</b> Ensure CD/DVD-ROM drive is configured correctly in BIOS Setup, cable/jumper are set correctly and its laser beam is clean before diagnosing any CD/DVD-ROM drive problems. |  |
| CD/DVD-ROM drive LED doesn't come on but works normally.  | <ol style="list-style-type: none"> <li>1. CD/DVD-ROM drive</li> </ol>  |
| CD/DVD-ROM drive LED flashes for more than 30 seconds before LED shutting off.<br><br>Software asks to reinstall disc.<br>Software displays a reading CD/DVD error.                     | <ol style="list-style-type: none"> <li>1. CD/DVD-ROM may have dirt or foreign material on it. Check with a known good disc.</li> <li>2. CD/DVD-ROM is not inserted properly.</li> <li>3. CD/DVD-ROM is damaged.</li> </ol>   |
| CD/DVD-ROM drive cannot load or eject when the system is turned on and its eject button is pressed and held.  | <ol style="list-style-type: none"> <li>1. Disconnect all cables from CD/DVD-ROM drive except power cable, then press eject button to try to unload the disk.</li> <li>2. CD/DVD-ROM drive power.</li> <li>3. CD/DVD-ROM drive</li> </ol>                                     |
| CD/DVD-ROM drive does not read and there are no messages are displayed.   | <ol style="list-style-type: none"> <li>1. CD may have dirt or foreign material on it. Check with a known good disc.</li> <li>2. Ensure the CD/DVD-ROM driver is installed properly.</li> <li>3. CD/DVD-ROM drive.</li> </ol>   |

| Error Symptom  | Action/FRU  |
|--|---|
| CD/DVD-ROM drive can play audio CD but no sound output.  | <ol style="list-style-type: none"> <li>1. Ensure the headphone jack of the CD/DVD-ROM has an output.</li> <li>2. Turn up the sound volume.</li> <li>3. Speaker power/connection/cable.</li> <li>4. CD/DVD-ROM drive.</li> </ol>   |
| <b>Real-Time Clock</b>   |   |
| Real-time clock is inaccurate.   | <ol style="list-style-type: none"> <li>1. Ensure the information in the <code>Date and Time</code> of BIOS Setup is set correctly.</li> <li>2. RTC battery.</li> <li>3. System board</li> </ol>   |
| <b>Audio</b>   |   |
| Audio software program invokes but no sound comes from speakers.   | <ol style="list-style-type: none"> <li>1. Speaker power/connection/cable.</li> </ol>  |
| <b>Modem</b>   |   |
| Modem ring cannot wake up system from suspend mode.  | <ol style="list-style-type: none"> <li>1. Ensure the <code>Modem Ring Indicator</code> in BIOS Setup or <code>Power Management</code> is set to <code>Enabled</code>.</li> <li>2. If PCI modem card is used, reinsert the modem card to PCI slot firmly or replace the modem card.</li> <li>3. If ISA modem card is used, ensure the modem ring-in cable from the modem card to system board is connected properly.</li> <li>4. In Win 98, ensure the telephone application is configured correctly for your modem and set to receive messages and/or fax.</li> </ol> |
| Data/fax modem software program invokes but cannot receive/send data/fax   | <ol style="list-style-type: none"> <li>1. Ensure the modem card is installed properly.</li> </ol>   |
| Fax/voice modem software program invokes but has no sound output. (Data files are received normally; voice from modem cannot be produced, but system sound feature works normally.)  | <ol style="list-style-type: none"> <li>1. Ensure the modem voice-in cable from modem adapter card to system board</li> </ol>  |
| <b>Video and Monitor</b>   |   |
| Video memory test failed.  | <ol style="list-style-type: none"> <li>1. Remove all non-factory-installed cards.</li> <li>2. Load default settings (if screen is readable).</li> <li>3. System board</li> </ol>  |
| Video adapter failed.  |   |
| Display problem:<br>- Incorrect colors<br>No high intensity<br>Missing, broken, or incorrect characters<br>Blank monitor(dark)<br>Blank monitor(bright)<br>Distorted image<br>Unreadable monitor<br>Other monitor problems | <ol style="list-style-type: none"> <li>1. Monitor signal connection/cable.</li> <li>2. Monitor</li> <li>3. Video adapter card</li> <li>4. System board</li> </ol>   |
| Display changing colors.   | <ol style="list-style-type: none"> <li>1. Monitor signal connection/cable</li> <li>2. Monitor</li> <li>3. System board</li> </ol>   |
| Display problem not listed above (including blank or illegible monitor).   | <ol style="list-style-type: none"> <li>1. "Monitor".</li> <li>2. Load default settings (if screen is readable).</li> <li>3. System board</li> </ol>   |

| Error Symptom   | Action/FRU  |
|---|---|
| <b>Parallel/Serial Ports</b>  |   |
| Execute "Load BIOS Default Settings" in BIOS Setup to confirm ports presence before diagnosing any parallel/serial ports problems.        |   |
| Serial or parallel port loop-back test failed.  | <ol style="list-style-type: none"> <li>1. Make sure that the LPT# or COM# you test is the same as the setting in BIOS Setup.</li> <li>2. Loop-back.</li> <li>3. System board.</li> </ol>  |
| Printing failed.  | <ol style="list-style-type: none"> <li>1. Ensure the printer driver is properly installed. Refer to the printer service manual.</li> <li>2. Printer.</li> <li>3. Printer cable.</li> <li>4. System board.</li> </ol>                  |
| Printer problems.   | <ol style="list-style-type: none"> <li>1. Refer to the service manual for the printer.</li> </ol>   |
| <b>Keyboard</b>   |   |
| Some or all keys on keyboard do not work.   | <ol style="list-style-type: none"> <li>1. Keyboard</li> </ol>   |
| <b>Power Supply</b>   |   |
| Pressing power switch does not turn off system. (Only unplugging the power cord from electrical outlet can turn off the system.)          | <ol style="list-style-type: none"> <li>1. Ensure the Power Switch &lt; 4 sec. in BIOS Setup of Power Management is not set to Suspend.</li> <li>2. Power switch cable assembly</li> </ol>   |
| Pressing power switch does not turn on the system.  | <ol style="list-style-type: none"> <li>1. Ensure the power override switch (situated at the back of the machine, just above the connector for the power cable) is not set to OFF.</li> <li>2. Power switch cable assembly.</li> </ol> |
| Executing software shutdown from Windows98 Start menu does not turn off the system. (Only pressing power switch can turn off the system). | <ol style="list-style-type: none"> <li>1. Load default settings.</li> <li>2. Reload software from Recovery CD.</li> </ol>   |
| No system power, or power supply fan is not running.  | <ol style="list-style-type: none"> <li>1. Power Supply</li> <li>2. System Board</li> </ol>  |
| <b>Other Problems</b>   |   |
| Any other problems.   | <ol style="list-style-type: none"> <li>1. Undetermined Problems</li> </ol>  |



## Jumper and Connector Information

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### Acer Power SP Jumpers and Connectors

Refer to the following figure for the location of the jumpers and connectors on the main board:



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## Connector Description

| Connector No. | Description                                   |
|---------------|---|
| CN1           | RS232   |
| CN2           | PS2 KB&MS                                     |
| CN3           | Audio Jack & Game Midiport                    |
| CN4           | Parallel port & serial port and VGA connector |
| CN5           | Network and USB ports                         |
| CN6           | CD-in 2                                       |
| CN7           | CD-in 1                                       |
| CN8           | Modem-in                                      |
| CN9           | ATX-12V                                       |
| CN10          | Front audio connector                         |
| CN11          | AUX-in  |
| CN13          | Front USB connector                           |
| CN14          | Front USB connector                           |
| CN15          | DIMM1   |
| CN16          | DIMM2   |
| CN17          | Front panel                                   |
| CN18          | ATX power connector                           |
| CN19          | IDE2 connector                                |
| CN20          | External SMI                                  |
| CN21          | Case open                                     |
| CN22          | WOL   |
| CN23          | IDE1 connector                                |
| CN24          | FDD connector                                 |
| J2            | IR connector                                  |
| PC11          | PCI slot 1                                    |
| PC12          | PCI slot 2                                    |
| PC13          | PCI slot 3                                    |
| BT1           | Battery                                       |
| U3            | Audio chipset                                 |
| U4            | LAN chipset                                   |
| U9            | CPU socket                                    |
| U12           | Intel 845 chipset                             |
| U13           | Intel ICH4 chipset                            |
| U15           | BIOS chipset                                  |
| U16           | Winbond chipset                               |

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## Jumper Setting

| Connector No. | Description            |
|---------------|------------------------|
| JP1           | Keyboard power         |
|               | 1-2 5V_SYS             |
|               | 2-3 5V_SB              |
| JP2           | Back Fan               |
| JP4           | CPU Fan                |
| JP5           | LAN disable            |
|               | 1-2 LAN Disable        |
|               | 2-3 Normal             |
| JP6           | BIOS setting           |
|               | 1-2 Clear CMOS         |
|               | 2-3 Default            |
| JP7           | Chassis Fan            |
| JP8           | BIOS Write Protect     |
|               | 1-2 Normal             |
|               | 2-3 BIOS Write Protect |

## FRU (Field Replaceable Unit) List




This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of Acer Power SP. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

**NOTE:** Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel (<http://aicsl.acer.com.tw/spl/>, if you do not own a specific account, you can still access the system with guest; guest). For whatever reasons a part number change is made, it will not be noted in the printed Service Guide. For ACER-AUTHORIZED SERVICE PROVIDERS, your Acer office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional Acer office to order FRU parts for repair and service of customer machines.

**NOTE:** To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how best to dispose it, or follow the rules set by your regional Acer office on how to return it.

| Picture   | Partname   | Description  | Part No.     |
|---|--|--|--------------|
| CPU/Processor   |  |  |              |
|    | NORTHWOOD 1.8AG SOCKET 478                         | Northwood 1.8Ghz/512k/400FSB, C1, SL6LA            | 01.NORTH.18C |
|   | NORTHWOOD 2.0AG SOCKET 478                         | NORTHWOOD 2.0GHZ/512K/400FSB, C1, SL6GQ            | 01.NORTH.20C |
|   | NORTHWOOD 2.4G SOCKET 478                          | NORTHWOOD 2.4GHZ/512K/400FSB, C1, SL6GS            | 01.NORTH.24C |
|   | NORTHWOOD 2.6G SOCKET 478                          | NORTHWOOD 2.6GHZ/512K/400FSB, C1, SL6DX            | 01.NORTH.26C |
| CPU Fan   |  |  |              |
|  | FOXCONN CPU SINK FOR 2800RPM, P4 SOCKET478 W/ LATH | FOXCONN CPU SINK FOR 2800RPM, P4 SOCKET478 W/ LATH | HI.47809.001 |
| Memory  |  |  |              |
|  | DDR 266 128MB 0.17u CL=2 16M*8*8 /INFINEON         |  | KN.12802.001 |
|   | DDR 266 256MB 0.14u CL=2 32M*8*8 /INFINEON         |  | KN.25602.002 |
|   | DDR 266 128MB 0.14u CL=2 16M*16*8 /NAYNA           |  | KN.12803.006 |
|   | DDR 266 256MB 0.175u CL=2 32M*8*8 /NAYNA           |  | KN.25603.002 |
|   | DDR 266 128MB 0.14u CL=2 16M*16*8 /MICRON          |  | KN.12804.001 |
|   | DDR 266 256MB 0.15u CL=2 32M*8*8 /MICRON           |  | KN.25604.005 |
| FDD/Floppy Disk Drive   |  |  |              |

| Picture   | Partname                                      | Description                                   | Part No.     |
|---|---|---|--------------|
|    | FDD 1.44MB PANASONIC JU-256A048P              |   | KF.25602.002 |
|   | FDD 1.44MB CITIZEN Z1DE-04A                   |   | TBD          |
|   | FDD 1.44MB TEAC FD-235HF-C291                 |   | TBD          |
| HDD/Hard Disk Drive   |   |   |              |
|    | HDD 40GB/5400RPM ATA-133/ MAXTOR ARES 2F040L0 | HDD 40GB/5400RPM ATA-133/ MAXTOR ARES 2F040L0 | KH.34003.004 |
|   | HDD WD-400EB-00CPF0/WD                        |   | TBD          |
| CD-ROM/DVD-ROM/CD-RW  |   |   |              |
|    | CD-ROM DRIVE 52X LITEON LTN-526S              | CD-ROM DRIVE 52X LITEON LTN-526S              | KD.52X09.001 |
|   | CD-RW DRIVE 52X/24X/52X LITEON LTR-52246S     | CD-RW DRIVE 52X/24X/52X LITEON LTR-52246S     | KR.52X01.001 |
|   | COMBO DRIVE 42X/24X/48X, 16X, HLDS            | COMBO DRIVE 42X/24X/48X, 16X, HLDS            | TBD          |
|   | DVD-ROM DRIVE 16X PIONEER DVD-120RD           | DVD-ROM DRIVE 16X PIONEER DVD-120RD           | TBD          |
| Cables  |   |   |              |
|   | IDE HDD CABLE ATA66 40PIN                     | HDD DATA CABLE                                | 50.PSPVF.001 |
|  | IDE CD-ROM CABLE ATA66 40PIN                  | CDROM DATA CABLE                              | 50.PSPVF.002 |
|  | IDE FDD CABLE 34PIN                           | FDD DATA CABLE                                | 50.PSPVF.003 |
|  | AUDIO CABLE 4PIN 2CON                         | AUDIO CABLE                                   | 50.PSPVF.004 |
|   | FRONT INTERNAL USB CABLE                      | USB CABLE                                     | 50.PSPVF.005 |
| Main board  |   |   |              |

| Picture   | Partname                                   | Description                          | Part No.     |
|---|--|--------------------------------------|--------------|
|  | FOXCONN M/B F61<br>(FOXCONN'S FB-611JGL)   | P4/845GL/ICH4/2DIMM/3PCI             | MB.PSP09.011 |
| Boards/Cards  |  |                                      |              |
|  | USB/ AUDIO DAUGHTER<br>BOARD FOXCONN       | USB/ AUDIO DAUGHTER BOARD<br>FOXCONN | 55.PSPVF.001 |
|  | MODEM CARD 56K ASKEY<br>1456VQH75D(INT)    |                                      | FX.14501.001 |
|   | MODEM CARD 56K GVC F-<br>1156I(+)/R12 /GVC |                                      | TBD          |

|   |   |  |              |
|---|---|--|--------------|
| Power Supply  |   |  |              |
|   | POWER SUPPLY 200W W/<br>O PFC FSP FSP200-ATV                        |  | PY.20008.001 |
|   | POWER SUPPLY 20W W/<br>PFC FSP FSP200-ATV(PF)                       |  | PY.20008.002 |
| Case/Cover/Bracket Assembly   |   |  |              |
|   | FRONT BEZEL W/ POWER<br>BUTTON, 5.25" 3.5" EMPTY<br>COVER, USB DOOR |  | 60.PSPVF.001 |
|   | POWER BUTTON  |  | 42.PSPVF.001 |
|   | USB DOOR  |  | 42.PSPVF.002 |
|   | SIDE DOOR   |  | 60.PSPVF.002 |
|   | CHASSIS W/ I/O BRACKET  |  | 60.PSPVF.003 |
|   | I/O BRACKET   |  | 33.PSPVF.001 |
|   | RETENTION MODULE  |  | 42.PSPVF.003 |
|  | LED MODULE  |  | 42.PSPVF.004 |
|   | EMPTY COVER FOR 5.25"<br>DEVICE                                     |  | 42.PSPVF.005 |

| Picture   | Partname  | Description | Part No.     |
|---|---|-------------|--------------|
|   | EMPTY COVER FOR 3.5" DEVICE                               |             | 42.PSPVF.006 |
|    | HDD BRACKET   |             | 33.PSPVF.002 |
| Peripheral  |   |             |              |
|    | KB, CHINESE , 104KEYS,<br>GIFT BOX W/PALM<br>KBP2971 PS/2 |             | KB.KBP03.010 |
|    | MOUSE PS2,<br>2BUTTON+WHEEL<br>LOGITECH S69               |             | 90.00026.007 |
|  | SPEAKER   |             | 23.PSPVF.001 |
| Screws  |   |             |              |
|   | M/B, USB BOARD SCREW                                      |             | 86.PSPVF.001 |
|   | FDD, CD-ROM SCREW   |             | 86.PSPVF.002 |
|   | CHASSIS SCREW   |             | 86.PSPVF.003 |
|   | SPS SCREW   |             | 86.PSPVF.004 |